

# A GRAZING HISTORY OF SOUTHWESTERN IDAHO WITH EMPHASIS ON THE BIRDS OF PREY STUDY AREA.

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A Grazing History of Southwestern Idaho with  
Emphasis on the Birds of Prey Study Area

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Population ecology and habitat requirements  
of Townsend ground squirrels.

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The opinions, findings, conclusions, and recommendations expressed in this report are those of the author and do not necessarily reflect the views of the Bureau of Land Management, U.S. Department of the Interior.



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## Preface

The semiarid rangelands of southwestern Idaho have been grazed by the livestock of man since about 1700, when the Shoshonis brought the first horses into the northern Great Basin. Since 1870, much of this area has been grazed intensively by cattle, sheep and horses.

Grazing, drought, fire and the invasion of the range by exotic annual plants, have brought about important changes in the character of the southwestern Idaho range. Most of this rangeland is presently subject to grazing under modern practices of range management. Intelligent management of the area requires insight into the pristine condition and productivity of the range in presettlement times, and knowledge of the history of grazing in the area since 1700--the grazing practices employed, the varying condition of the range and the changing character of the vegetation.

This paper represents a gathering of information concerning the grazing history of southwestern Idaho, with special emphasis upon the Snake River Birds of Prey Study Area adjacent to the Snake River canyon (Map 1).





## CHAPTER I

### Presettlement Vegetation and Grazing

#### Presettlement vegetation

When the earliest explorers visited the western Snake River plain, it was not a grassland. The overland explorers saw an abundance of grasses, but the grasses were under an open stand of shrubs (McArdle 1936, Piemeisel 1938, Blaisdell 1953, Ellison 1960, Vale 1975). Several 20th century ecologists believed the area originally to have been grassland with few shrubs (Vale, 1975). Many ranchers and range managers have labored during recent decades to "restore" this supposed original grassland, believing that the native shrubs such as big sagebrush (Artemisia tridentata) invaded the grassland following disturbances such as fire or injurious grazing (Ellison 1960, Vale 1974, 1975).

Careful reading of the accounts, journals, reports, and diaries of the explorers and early emigrants, however reveals that the presettlement Snake River Valley was basically a landscape of sagebrush (Fig. 1). An Indian name for the Snake River was "Pohagwa," or "Sage Brush River" (Elliot 1913). Viewing the Snake River plain in the summer of 1834, the young naturalist John Townsend wrote that the plain was covered with rugged lava and twisted wormwood (1839) (Wormwood is the common name used for Artemisia species in the old world). Fremont (1845) wrote that the region was called the "Sage Desert" because it was covered with Artemisia as far as the eye could see. Bonneville also reported seeing much wormwood on the Snake River plain (Irving 1907).

Less well-known Snake River country travelers also noted the predominance of sagebrush. In 1830, John Work recorded an incident "near Owyhee" during which the "poor Indians fled and concealed themselves among the wormwood" (Elliot 1913). In 1857 Field spoke of the plain covered with sage. Cross in 1851 commented that nothing but the Artemisia was to be seen, and Spaulding in 1853 noted that the ground was covered with sage and saltwood with very arid conditions prevailing (Vale 1975). As early as 1848, reports of the Snake River plain of sage had been received by emigrants in the East. Root wrote in 1848 of the plain bearing the "fam'd (sic) sage" (1955:20). Root, who crossed the Snake River country in 1848, perhaps summed up the feelings of the earliest travelers of the region most graphically: "It is said that the Indians of this place are snakes in the grass, but it is much to be regretted that the river is not a snake in the grass..." (Root 1955:24).

The Oregon Trail emigrants traveling through western Idaho used one of two routes. The Old Oregon Trail, or original route, crossed to the north bank of the Snake River at Three Island Crossing (near the site of the present town of Glens Ferry) and continued west, passing slightly to the north of Mountain Home and then to Boise. The trail crossed the Boise River near Caldwell, and proceeded west toward Parma, near the eastern border of Oregon, and crossed the Snake River again. The second route was the South Alternate or Dry Route. This route did not cross the Snake at Three Island, but remained on the south side of the river, keeping closer to the Snake, and passed near "the sand dunes" (now

Bruneau Dunes State Park). The South Alternate went past the present site of Bruneau, past what is now Grand View, Murphy, Marsing, and Homedale, and rejoined the Old Oregon Trail several miles west of Parma. In general, this route ran closer to the Snake River than does the present Idaho Highway 78 (Kramer 1974).

Big sagebrush was common along both routes, but the South Alternate route was much drier and more barren. Basil Nelson Longworth, an 1853 emigrant on the Old Oregon Trail, remarked upon the sage near Boise (Gibbs 1976). Arabella Fulton, who traveled the Old Trail in 1864, wrote that two days before coming to Boise they were traveling over a high plain covered with sagebrush. She noted that "...on this high bench of land stretching between the Boise River and the Snake River far to the south of us, we beheld sagebrush as far as the eye could see! A veritable ocean of sagebrush!" (Fulton 1965:68). Fruch used the South Alternate route in 1850 and Duniway in 1852, both writing that at times nothing but sage was visible (Meacham 1979). E.S. Crawford and McComas, traveling the South Alternate in 1842 and 1862 respectively, both mentioned the sage, and also commented upon the growing desolation of the land after crossing the Bruneau River (Meacham 1979).

Big sagebrush seems to have been the most impressive and the most often mentioned vegetation type noted by the explorers and the emigrants crossing the Snake River plain. However, other plants were also mentioned. Arabella Fulton, who settled in the Boise Valley in 1864, writes of the large "white sage" area on the Snake River not too many miles from Boise (Fulton 1965). "White sage" was the common epithet among Idaho settlers for winterfat, *Ceratoides lanata* (O.R. Hicks pers. comm. 1979). Nettleton (1978) recorded that early Owyhee County had very abundant white sage. David Shirk saw vast areas of white sage along the Snake River in Owyhee County in the late 1860's and early 1870's (Shirk 1956). Taylor (The Idaho Statesman, February 4, 1940) reported the great importance of large areas of white sage near Nampa, Givens Hot Springs, and Walters Ferry in wintering the cattle which fed the early miners in the 1860's. Keith (1938) wrote that in the late 1860's, thousands of miles of white sage covered the Snake River plain. The Surveyor-General of Idaho wrote in 1870 that more than half of the sage in central and southern Idaho was white sage (Gibbs 1976). Griffiths (1902) saw large areas of white sage in southeastern Oregon.

Other shrubs were also mentioned by the early travelers. "Greasewood" is a plant name that has meant and still means many different species to different people. However, greasewood which can be identified as *Sarcobatus vermiculatus* was mentioned by several early travellers as occurring where it does today, in alkali bottomlands along the Snake (The Idaho Statesman, November 20, 1884; Root 1955; Shirk 1956). Root (1955) called Castle Creek "Greasewood Creek."

The South Alternate Oregon Trail emigrants mentioned other shrubs (though not by name) which were smaller and more "mean" than big sagebrush. As these people left the Bruneau River and proceeded northwest along the Snake, big sagebrush became less abundant, and these smaller shrubs more common. Several emigrants noted that these shrubs grew on soils so poor and dry that sage could not grow (Meacham 1979).



VIEW ON SNAKE RIVER OF ARTEMISIA PLAINS

Fig. 1. 1849, Engraving of a wagon train crossing the Artemisia-covered Snake River Plain.

These shrubs probably included those which grow there today: spiny hopsage, Atriplex spinosa; bud sagebrush, Artemisia spinescens; fourwing saltbush, Atriplex canescens; nuttall saltbush, Atriplex nuttallii; shadscale, Atriplex confertifolia; winterfat, Cercatoides lanata, rubber rabbitbrush, Chrysothamnus nauseosus; and Douglas rabbitbrush, Chrysothamnus douglassii, and bitterbrush, Purshia tridentata. An early engraving (Fig. 1.) shows tall shrubs which could be either bitterbrush or big sagebrush growing on the Snake River plain. More mesic shrubs were mentioned by several emigrants. Willows (Salix) were mentioned as growing along rivers and creeks (Meacham 1979). Currants (Ribes) were also noticed. Sharp, an 1852 South Alternate emigrant, referred to Castle Creek as "Current (sic) Creek" (Meacham 1979). Charles Nelson Teeter, an Old Oregon Trail traveler in the early 1860's, reported seeing an abundance of currant bushes on the Snake River plain (Teeter 1932). These were most likely the golden currant, Ribes aurea.

Forbs found beneath the shrubs were also an important part of the presettlement vegetation (Blaisdell 1953, Ellison 1960). Vahlberry (1940) reported that "sunflowers" covered the range in the Boise-Emmett area in the 1880's. "Sunflower," to early settlers in Idaho, almost invariably meant the showy yellow composite balsam root, Balsamorhiza sagittata. Balsamroot was very common on the Snake River plain, coloring many areas yellow in late spring with its large flowers (O.R. Hicks pers. comm. 1979, C.L. Stewart pers. comm. 1979). In 1854, the Alternate Route parties of Condit and Sylvanis called the Bruneau River "Sunflower Creek" (Meacham 1979). Kennedy (1903) and Kennedy and Doten (1901) also found balsamroot to be very common at the turn of the century on ranges in northern Nevada, as was "tomato plant", or waterleaf, Hydrophyllum capitatum.

Perhaps the most commonly mentioned grass was "wild rye", which was probably Great Basin wild rye, Elymus cinereus. This tall bunchgrass is very visible at all seasons of the year. Wild rye was much more common on the Snake River plain and along stream bottoms in pioneer days than it is today (O.R. Hicks, pers. comm. 1979), with some extensive and nearly pure stands in meadows and river bottomlands (Nettleton 1978, Lesperance et al. 1978). Mrs. T.M. Ferrin, who traveled the Snake River plain in July 1884, followed the Old Oregon Trail in reverse from Yakima, Washington, to Utah. She wrote that traveling from Boise to Utah, she could see a tall, dense cover of waving grass similar to a great wheat field, interspersed with brush, but not with as much brush as "now" (1935, the year of her letter) (Ferrin 1935). This tall grass was undoubtedly Elymus cinereus, it being the only grass tall enough to wave its seed heads above the big sagebrush.

"Bunchgrasses" were mentioned by many travellers, including Fremont (1845); Stover (1940), who came to Idaho in 1886; and Vahlberry, who settled near Emmett in 1880 (1940). South Alternate Trail users also mentioned bunchgrasses (Meacham 1979), although "salt grass", probably Distichlis sp., was most commonly mentioned (Meacham 1979). Root (1955) called the Bruneau River "Salt Grass Creek" when he passed there in 1848. Many others mentioned seeing salt grass at Three Island Crossing, along the Snake River, and in the bottoms along the Bruneau River, Castle Creek, and Sinker Creek (Meacham 1979).

The grasses that the pioneers saw were the native perennials. Important species belonged to these genera: Stipa, Poa, Oryzopsis, Festuca, Sitanion, and Elymus. The emigrants would not have encountered exotic annuals including cheatgrass, Bromus tectorum; Russian thistle, Salsola iberica; halogeton or barilla, Halogeton glomeratus; peppergrass, Lepidium perfoliatum; tansymustard, Descurainia sophia; tumble-mustard, Sisymbrium altissimum; and crane's bill, Erodium cicutarium, which are common today (Kennedy 1903, Weaver 1917, Spence 1937, Piemeisel 1938, Hull and Pechanec 1947, Stewart and Hull 1949, Dayton 1951, Piemeisel 1951, Tisdale and Zappetini 1953, Holl 1954, Robocker 1958, Johnson 1957, Robocker 1961, Johnson 1961, Klemmedson and Smith 1964, Angelo 1969, Tisdale et al. 1969, Vale 1975, Evans 1978).

There are many journals and diaries of explorers and early emigrants and settlers, but few mention vegetation at all, and fewer still enable a later reader to identify the vegetation described with any degree of confidence. Many, if not most, of these early reports describe the Snake River plain as "desolate", "barren", or as a "waste". It is important to bear in mind that these people were for the most part inhabitants of the humid (and, in comparison, rainy) eastern United States. In addition, almost without exception the emigrants left their various eastern points of departure in early spring and spent weeks passing through the great expanse of the true prairie at the height of its yearly lushness, arriving on the more xeric Snake River plain in July and traversing it after most of the grasses had set seed and become dry and dormant for the year. Naturally, in comparison, the Snake River country, especially the western part of it, would seem to have little grass and to be "barren" (Tisdale et al. 1969, Young et al. 1979).

#### Presettlement grazing by native animals

Little information is available concerning the relative abundance of mule deer, Odocoileus hemionus, and wapiti, Cervus canadensis, in presettlement times. Townsend (1839) reported that the "black tailed deer" was abundant. Sweetser (1935) wrote that herds of mule deer and wapiti wintered in the Raft River Valley in southeastern Idaho in bands of over 100 individuals as late as 1930. Sagebrush-grass areas were important wintering areas for deer, wapiti, and antelope (Pechanec 1941). Pronghorn antelope, Antilocapra americana, roamed the Snake River plain in bands of hundreds, with a large concentration inhabiting the region along the Snake River from the Bruneau River to Reynolds Creek (Autenreith 1978). Work saw a few pronghorn in 1830 near the head of the Owyhee River (Elliot 1913). Important forage plants for wintering pronghorn are winterfat, shadscale, and big sagebrush (Autenreith 1978). American bison, Bison bison, did not range farther west than the Idaho Falls area of the Snake River plain, and any stragglers which might have strayed farther west would have been too few to have had any impact upon the vegetation (Galbraith and Anderson 1971, Haines 1970).

Lagomorphs and rodents, the smaller grazers, may have been significant grazers of the region. Black-tailed jackrabbits, Lepus californicus; cottontail rabbits, Sylvilagus nuttallii; and ground squirrels, Spermophilus townsendii, were abundant enough to be an important part of the diet of the Indians of the area (Walker 1978) and,



when abundant, these animals eat much grass and browse (Vorhies and Taylor 1933). Jackrabbits can cause local depletion of ranges (Vorhies and Taylor 1933). Early Idaho settlers reported that jackrabbits were extremely numerous (Greenwood 1934, O. R. Hicks pers. comm. 1979).

The most important avian grazer was probably the sage grouse, Centrocercus urophasianus, which was very numerous on the Snake River plain in presettlement days (Townsend 1839, O. R. Hicks 1979 pers. comm.). Sage grouse graze upon big sagebrush, grasses, and forbs, and are especially dependent upon sage for wintering (Martin 1970, Wallestad 1975).

Invertebrates were also important grazers on the western Snake River plain. During the 20th century shadscale has been attacked and damaged or killed over large localized areas in southern Idaho by two insects, the scale insect, Orthezia annae, and the snout moth, Eumysia sp. (Hutchings 1952, Tisdale and Zappetini 1953, Sharp and Sanders 1978, Chambers 1979). There seems no reason to suppose that this insect damage to shadscale has not been occurring for a very long time. Also, big sagebrush has been periodically defoliated by the larvae of the moth Aroga websteri (Blaisdell 1953).

More spectacularly, orthopterans have at times grazed intensively upon and have caused much damage to the vegetation of this area. Plagues of grasshoppers and crickets occurred in the Great Basin in presettlement times (Bleak et al. 1965, Fulton 1965, Galbraith and Anderson 1971). Donaldson (1941) describes a sun-darkening cloud of grasshoppers in Boise in 1869 and also hordes of crickets which clogged waterwheels in ditches. Friedline (1941) wrote that settlers in the Boise-Kuna area oiled canals to stop a plague of grasshoppers in 1892. The journal of the pioneer Annie Jane reported a 1904 grasshopper plague which extended from Camas Prairie (near Fairfield and Hill City) to Boise (Foster 1974). It is clear that periodic eruptions of orthopterans which ate nearly everything, occurred frequently on the Snake River plain.

#### Presettlement grazing by Indians' livestock

Two major groups of Indians were present in southwestern Idaho. The Shoshoni-Bannock inhabited the southern Idaho plains and mountains, while the Paiutes in Idaho inhabited the territory south and west of the Snake River from about the Hammett area north and west to the vicinity of Homedale (Walker 1978). In the Owyhee Mountains lived the "White Knives", or Tsawi Shoshonis, so named from the white flint knives they used (Trenholm and Carley 1964).

Southern Idaho was not rich in resources compared to many other North American Indian territories. These Indians did not have agriculture, and moving from food source to food source was a way of life. Periodic starvation occurred as temporary food sources failed, and bad weather added its stresses (Walker 1978). By North American standards these tribes were not rich, living in a semiarid and changing environment which lacked the tremendous resource of the bison (Walker 1978). This description of Shoshonean subsistence does not necessarily hold true for all parts of the Great Basin. Some areas, such as the Snake River canyon, were rich in riverine resources (Thomas 1971).

The Paiute, who roamed the most arid part of the western Snake River plain, lived a subsistence existence. They formed small bands and did not have the resources to fight wars or to make the trek to western Montana and Wyoming for bison (Walker 1978). Their homes were small huts of poles thatched with mats of grasses or tules (Haines 1970, Hopkins 1969). In winter, they lived in villages at lower elevations. One such wintering area was on Castle Creek (Philips n.d.). Summer was a time for traveling and foraging. Salmon from the Snake River was an important year-round food item. Roots, berries and wild fruits, seeds of grasses, insects, and big game animals, especially deer and mountain sheep, Ovis canadensis, were also included in their diet. In the fall, they organized drives for rabbits and for antelope (Walker 1978). Rodents were important in the diet, and when available they were skewered by long poles thrust into the burrows and withdrawn carefully (Butler 1968, Walker 1978). These rodents were probably the Townsend ground squirrel, which is common in the area.

The Paiutes did not undergo a cultural upheaval with the coming of the horse as did the other Indians of Idaho. They were too poor to trade for horses or to fight for them, and when they encountered a horse, they usually killed and ate it (Haines 1970). They had few horses until after part of their land had been settled by whites (Walker 1978). White settlers rather contemptuously called them "Diggers" (though the Shoshonis were occasionally called "Diggers" as well). The Shoshonis occasionally attacked whites, while the Paiutes mostly confined their hostility to raids on settlers' livestock for meat (Haines 1970).

Some Shoshoni-Bannock bands also lived close to subsistence level before the coming of the horse. The horses which were traded to them circa 1690 initiated a cultural revolution (Haines 1970) that made them rich by Great Basin standards (Walker 1978). Horses were brought to the southwest in 1541 by the Spaniards, and were widespread throughout the northwest by about 1710. The Navajos obtained horses from the Spaniards and passed them along to the Utes, who traded some to the Shoshonis. Horses were traded from east to west on the Snake River plain. This pipeline was very rapid, for Lewis and Clark mentioned seeing mules, and also horses with Spanish brands in the Columbia Basin (Dobie 1952). Horses arrived in the Boise-Payette area in about 1700 (Haines 1970). The Shoshoni were the primary distributors of horses to the other tribes of the northwest, trading the first horses to the Cayuse, Walla Walla, Nez Perce, Flathead, Blackfoot, Crow and many other tribes (Haines 1970). Several sources comment on the large numbers of horses possessed by the Idaho Shoshonis. Lewis and Clark (Dobie, 1952), Townsend, (1839) many Astorian fur trappers (Dobie 1952), Irving (1907), and Wilson (1971) all mentioned the great numbers of horses they saw with the Shoshonis. It is possible that there were from several to several hundred horses for every man, woman, and child in many Shoshoni bands by the time of the first white explorers (Dobie 1952). The possession of the horse made these Indians wealthy. They could afford to make a major foray each year into the eastern bison country and return with enough meat and valuable hides to ease the hardship of winter. They could also fight and keep the warlike and bison-sustained Blackfeet out of their home territory (Haines 1970). Their diet and use of the vegetation were very similar to that of the Paiutes with the exception of their horses (Haines 1970). Thus, the

Shoshoni-Bannock were the first men to graze stock on the Snake River plain, and probably did so in numbers sufficient to have a significant impact upon the vegetation. While the density of the Paiute in their range was from 1.5 to 2 persons per 100 square miles, the density of the Shoshoni-Bannock was from 2 to as many as 12 persons per square mile (Walker 1978). Since the Shoshoni-Bannock wintered in large bands on the Snake River plain near the mouths of tributaries of the Snake (Trenholm and Carley 1964), their horse herds probably also wintered nearby on the wild rye and dry grasses of these bottomlands. The Indians also wintered horses on the winterfat south of Boise (Fulton 1965).

As these Indians saw the emigrants traversing the Oregon Trail in ever-increasing numbers, they became angered that the wagon trains' livestock had severely grazed the grass along the trail and that the emigrants had killed the game in the vicinity. It was these Indians who harassed, raided, and sometimes killed the whites. The horses made it possible for the Indians to escape immediate retaliation. Those without horses were not so fortunate, and often found themselves at the mercy of whites who got from \$25 to \$100 a scalp, raised by subscription at public meetings (Madsen 1958). Bands of Indians with their horses ranged the high sagebrush between Indian Cove on the Snake River and Mountain Home as late as the 1880's (Young 1955).



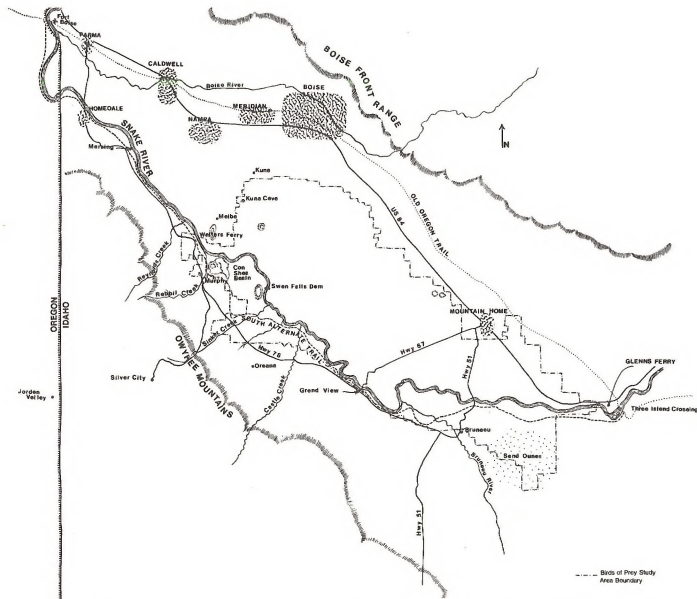


Fig. 2. Map of the Birds of Prey Study Area showing emigrant trails, landmarks, and presently existing roads.

## CHAPTER II

### The Overland Emigrants

#### The Old Oregon Trail

The first recorded impact of livestock on the vegetation of the western Snake River plain came with the wagon trains of the emigrants on the Oregon Trail (Map 1). Most emigrants were family groups intent upon bringing everything they could possibly carry to facilitate the setting up of farmsteads (Unruh 1979). This included the oxen, mules, or draft horses that pulled the wagons, riding horses, and usually a few cattle per family. Since the grasses were rapidly drying into dormancy at the time when most emigrants entered Idaho in mid-summer or early fall, feed for the emigrants' livestock was short from the very beginning of travel.

The first party to bring a wagon at least most of the way across Idaho was the Washington-bound missionary party of the Whitmans and Spauldings. The Whitmans' wagon made it to Boise (but no further) in 1836 (Gibbs 1976). But even at that very early date, the Whitmans' stock, 20 head of cattle, arrived at Boise in very poor condition, worn down by the trek and by the lack of adequate pasturing. Five were left in Boise, too weak to travel further (Kingston 1923, Bird 1971). Another very early group was the Peoria party, whose chroniclers repeatedly mention the barrenness of the land along the Snake and the relief during times when good grass for the stock was available. Sidney Smith, a member of the Peoria party, records his arrival in Boise in September, commenting that there had been no rain there for the three months and that the vegetation was dry and dusty (Hafen and Hafen 1955).

Once the westward movement had begun, it grew rapidly. By 1846, Oregon Trail guides for wagon trains were unnecessary because trails were clearly visible. By 1849, the Oregon Trail was a beaten track, a well-marked road for even the least trail-wise of emigrants (Unruh 1979). In the late 1840's there were periods when there was no grass at all at many camps along the trail. Emigrants' livestock had to be driven several miles from the trail to be pastured (Page 1930).

The early 1850's saw the peak of Oregon Trail emigration (Unruh 1979). Whereas in 1849 about 450 wagons came westward along the Oregon Trail, in the peak year of 1852 about 10,000 wagons used the trail. Some travelers of the time reported passing more than 200 wagons in the course of one day. To add to the congestion, a significant number of travelers took the Oregon Trail in reverse, going by ship to the Pacific coast and then eastward to the Missouri and Iowa frontiers. Some even found it a relief on the few occasions when they were able to camp out of sight of other wagons (Unruh 1979). This meant thousands of head of cattle and horses on the Snake River plain during the driest part of the year. In 1851 Cross described the entire Snake River country as completely destitute of grass for 700 miles (Vale 1975). One small blessing for travelers of the Oregon Trail on the north bank of the Snake was that many more of the gulches on the Snake River plain had water at that time than do now (L.H. Hicks pers. comm. 1979). Nevertheless, the Snake River

plain, especially the western half, was thought by many, emigrants to be the most difficult part of the overland journey (Vale 1975). The Jason Lee party in 1834 brought probably the first herd of cattle trailed overland to the Pacific Northwest from the east. The Lee party recorded that the Snake River plain was the most difficult part of the trip for the stock (Kingston 1923).

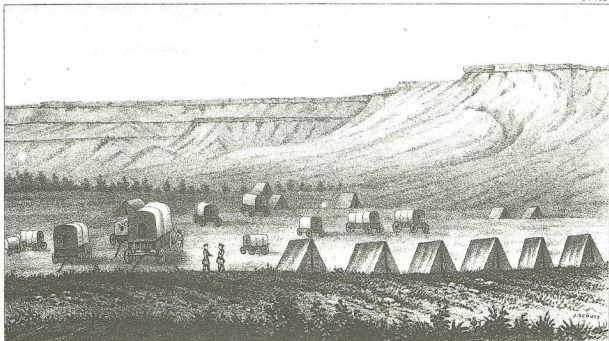
Emigrants' cattle that made it successfully across most of the plain could recover from the hardship of the journey by grazing the 5 and 6 foot high wild rye that grew in the Boise Valley (Dunlop 1971). The livestock needed sufficient strength to make it over the next big hurdle to face the emigrants, the crossing of Oregon's Blue Mountains before winter. Unruh (1979) quoted an 1852 issue of the Portland Oregonian as reporting that since there was little forage for the large number of draft animals on the trail, many overlanders were arriving in Oregon on foot after abandoning their livestock. It became a common practice for such emigrants to abandon their livestock near Boise (Fulton 1965). Others sold their animals in Boise and used the money when they had reached Vancouver or Ft. Colville to buy new animals (Kingston 1923). Still others elected to spend the winter in the Boise Valley area, turning out their cattle and horses to graze upon the winterfat plains south of Boise. The area miners would herd them loosely and in return occasionally pick out an animal for slaughter. With the animals fattened and recovered by spring, the emigrants would retrieve them and proceed on to Oregon (Fulton 1965).

#### The South Alternate Trail

The South Alternate travelers perhaps had the most difficult crossing of the Snake River plain (Map 1). The South Alternate Trail, or "Dry Trail" as it came to be known, did avoid the dangerous crossings of the Snake River at Three Island and near Ft. Boise. However, it was the driest, most barren part of the journey, usually traversed at the very end of warm weather when the grass had withered and dried. The South Alternate diarists had among the harshest of all assessments of the Oregon Trail conditions. They complained of dust leg-deep in the wagon ruts, and of livestock half suffocated by it. Many accounts mention the heat with the dust, the camps without grass or water, the graves by the side of the trail, and the increasing numbers of dead cattle on the trail (Meacham 1979).

#### Grazing problems along the Trail

After 1850, many dead cattle were found along the Oregon Trail. These carcasses were mute evidence of the first overgrazing in the region by the livestock of white men. Unruh (1979) wrote that in 1853 Oregon-bound Maria Belshaw kept count and totaled 190 dead cattle observed along 321 miles of the trail paralleling the Snake River. The Indians began taking advantage of the situation by crippling weak cattle so that they could be scavenged later for food (Unruh 1979). Meat was somewhat scarce for these Indians because of the decimation of the grass along the trail and the elimination of game animals in its vicinity (Madsen 1958). The South Alternate emigrants reported so many dead cattle, several per mile on some stretches, that there was a stench for miles on end. Kerns, an



VIEW FROM CAMP GROUND AUG 22ND 1849.

A. Newman Lith. 373 Broadway N.Y.

Fig. 3. 1849, Engraving of a wagon train encampment on the South Alternate Trail, near Bruneau.

1852 traveler, complained about the lack of good water to drink, because the Snake River was full of dead cattle. Another 1852 South Alternate emigrant, Hanna, likened the trail to Dante's Inferno--a desolate waste littered with the skeletons of dead animals (Meacham 1979).

It is no exaggeration to say that the perennial grasses within several miles to either side of the Oregon Trail routes must have been severely injured by the time of peak emigration. Ten thousand wagons a year would mean, by the most conservative possible estimate, 60,000 head of horses, cattle, and mules, and there were without doubt many times that number. Many emigrants had small herds of cattle, and most had more than a dozen horses, even if they had but one wagon. Also, the wagon estimate does not consider the many thousands of emigrants who traveled the Oregon Trail without wagons, and brought stock along the trail (Unruh 1979). A more realistic estimate is 250,000 head of livestock crossing the Snake River plain each year during the years of peak emigration.

By the 1860's the flood of overland emigrants had slowed to a steady trickle (Unruh 1979) and the settling of Idaho had begun (Lowell and Peterson 1976, Fulton 1965).

The settling of Idaho was just beginning, but range problems upon the western Snake River plain in the vicinity of the Oregon Trail were already present.

## CHAPTER III

### The Beginning of the Cattle Industry

#### The home-use cattle industry

Not all emigrants continued the journey on to Oregon. Some, attracted by the lush grasses and the promise of good soil under the sagebrush, settled in Idaho (Rinehart 1932, Peterson 1976, O.R. Hicks pers. comm. 1979). Viewers of the Idaho range as early as 1845 commented upon how well-suited the land would be for the raising of stock and for farming (Fremont 1845). Many, like Arabella Fulton, wintered in Boise with the plan of resuming the journey to Oregon the following spring, but remained a lifetime (Fulton 1965). By the 1860's Boise was a town with streets and stores (Bird 1971, Peterson 1976, Bliss 1976). Areas were being turned into farms near present-day Kuna, Nampa, Caldwell, Parma, and Melba (Wylie 1976, Lowell and Peterson 1976). The settling of farms near Boise occurred at the same time that the Boise Basin gold rush of the 1860's caused an influx of miners and prospectors into the area (Haines 1970, Lowell and Peterson 1976). Silver strikes, especially the important one at Silver City in 1864, also accelerated movement of people into Idaho (Chadwick 1976).

Naturally, the first settlers claimed the best lands, which were the rich bottomlands along the rivers and streams (Sharp and Saunders 1978, Rinehart 1932). Many of these homesteaders had been farmers, and knew how to choose good farmland. In addition, the emigrants recognized that soils which grew tall sagebrush were the best soils (Meacham 1979), and consequently, these good sagebrush lands nearest water were farmed early.

Before farming could begin, sagebrush had to be removed. This was done by plowing, scraping, burning, or a combination of all three. Horse-drawn plows and scraping bars or logs were used for removing the sage (Lowell and Peterson 1976, Nettleton 1978). Many old photographs of the land near present-day Nampa, Caldwell, Parma and Boise show a predominant cover of sagebrush where now there is cultivated farmland (photos on file at the Idaho Historical Society Library). Burning before plowing also removed the sagebrush (Young 1955). This was an effective method, since big sagebrush does not sprout from stumps or roots after being burned (Vale 1974).

The early settlers had stock, which had to be pastured. Each farm had milch cows, riding horses, and work horses, mules, or oxen, most of which were needed daily, making it necessary for them to be pastured close to the settlers' homes. The best stands of grass were converted into fields and orchards and the next best grazing was to be found just outside those fields. The settlers pastured their livestock year-round on the open range adjacent to their fields (Rinehart 1932, Hodgeson 1948). Most of the cattle belonging to the settlers were of Devon and shorthorn breeding, the "red cattle" valued by the early farmers (Hodgeson 1948). Often called "red polls", the original stock had come from England (Paul 1973). Figure 4, (a photograph taken near Boise in about 1910), shows a herd of these "red cattle". Estimated expense for keeping a cow for a





Fig. 4. "Red poll" cattle.

year was little more than one dollar. Demand for beef and for work oxen was high. Therefore, as a general practice, cows and heifers were not slaughtered, as settlers endeavored to increase their herds. In the 1850's and 1860's, yearlings sold for approximately \$12 to \$16 per head, and two-year-olds for \$20 to \$24 (Rinehart 1932).

The Bruneau Valley, also a rich grassy bottomland, was settled in the 1860's. The first settlers recognized this valley's potential for stock raising, and most of the pioneers were ranchers rather than farmers (Jones 1963). The land between Bruneau and Walters Ferry south of the Snake River was more xeric than the Boise area north of the Snake River. The ownership of permanent water sources, therefore, was very valuable. An early ranch to be founded was the Joyce Ranch on Sinker Creek (Nettleton 1978) in the 1860's. The ranch at Castle Creek was founded somewhat later and was well-established by 1894 (Philips n.d.). Sinker Creek and Castle Creek are the two most important streams in this area.

The small numbers of cattle and horses held by the first farmers constituted the beginning of the livestock industry in Idaho. It was a home-use industry, without marketing to outside areas. Railheads were too distant to repay the cost of trailing in herds from distant territories to fatten on Idaho ranges (Rinehart 1932), and local demand was insufficient to cover expenses.

The gold strike at Idaho City and the silver strike at Silver City changed the situation. At first the settlers' surplus livestock was sufficient to meet the demands of the hungry miners. This was true only as long as sufficient game to supplement the livestock could be found in the nearby countryside. Market hunters combed the hills around Silver City until the game was exhausted (Haines 1970). The disappearance of local game set the stage for the coming of trail herds from outside of Idaho.

#### The first trail drives to Idaho

In the 1860's, Con Shea, a Silver City blacksmith, was approached by financier Christopher Moore and asked to trail a herd of longhorn cattle from Texas to Silver City (There is also a legend that a Silver City madam put up the money for Con Shea's first cattle drive). Shea and his two brothers, Tim and Jerry, travelled to central Texas and bought 1,000 head of longhorns, driving them north that summer (Hanley and Lucia 1973). These cattle were the old Spanish unimproved type, described as Jersey-colored and high-shouldered, with low, thin hips (Keith 1938). Shea arrived with his herd in the fall, and wintered them near Oreana during the winter of 1867-68. These cattle were slaughtered for beef, and early 1869 saw the return of Shea from Texas with another herd. This herd numbered about 2,000 head (Keith 1938, Hanley and Lucia 1973). The cattle and horses were too weak to travel to the previous year's wintering area, and were turned loose along the Snake River to forage. They later were driven to a wintering area near Silver City (Hanley and Lucia 1973). Keith (1938:43) stated that this herd was wintered on the winterfat "that covered thousands of square miles of the great Snake River valley." Con Shea, now established as a cattleman, remained in the Owyhee country and with his brothers established a ranch. He grazed his



livestock along the west bank of the Snake, and one of his cattle's foraging areas now bears his name: Con Shea Basin (Nettleton 1978).

David Shirk, another early drover, also used the gains he made in trailing Texas herds to Idaho to become a rancher. In 1867, George T. Miller purchased a herd of cattle in California and southwestern Oregon, and trailed them to the Owyhee area of the Snake River plains. Miller hired Dave Shirk, then a resident of Silver City, to herd them for the winter of 1867-68. Shirk grazed this herd on the winterfat along the Snake River, where they got fat. Each week, Shirk would drive one to two dozen head to Silver City to be sold to the butchers. Shirk wrote that this was "the severest winter ever known, before or since, to my knowledge" (Shirk 1956:33). The snow was two feet deep on the level, and the Snake River froze over. The cattle, in spite of the weather, did well, foraging on abundant winterfat, greasewood, and "thorny rabbit brushes". Shirk, precisely identifying what he called "white sage" as *Eurotia* (the generic name for winterfat in scientific use for decades until recently superseded by *Ceratoides*), wrote, "there was worlds of white sage at that time" and that it grew from one to two feet tall (Shirk 1956:41).

In the spring, the remaining cattle were sold to Phil Kohlhire, and Shirk continued to manage them. In the fall of 1869, Miller brought another herd up from Texas and rehired Shirk to herd them. Shirk and Miller drove the herd toward the Bruneau River, where the cattle wintered in the Bruneau Valley and on the winterfat plains between there and Duck Valley. In the spring this herd was driven to the headwaters of the Owyhee River and was gradually sold to Silver City butchers (Hanley and Lucia 1973). In the fall of 1870, Miller sold his remaining cattle to Stopher and Dodsworth of Elko, Nevada (Shirk 1956).

Miller and Shirk went into partnership with a third man, Walters, and bought 1,500 cattle in Texas. Miller's share of these was 1,000 head; the other two partners had 250 head apiece. Several more head were acquired during the long drive north. Shirk's share of cattle at the end of the drive was 274 head, and when the herd reached the Bruneau area in October of 1871, it was about 1,650 strong. Shirk wintered his own cattle 1 1/2 miles from the Rabbit Creek-Snake River confluence, where they thrived upon winterfat and bunch grass. In May, Shirk sold these cattle, which he had purchased in Texas for \$4.50 to \$5.75 per head, for \$35 per head (Shirk 1956).

In 1873, Shirk, now a cowman, brought out his own herd from Texas. Using the profits from this venture, he founded a ranch in Grant County, Oregon, and was an important rancher there for many years (Shirk 1956).

#### Cattle drives east through Idaho

Just as important to the Idaho range, but less a part of the lore of the region, were the cattle drives east from Oregon through Idaho, bound for eastern markets. That these drives began very early is evident from a note in Silver City's newspaper, the *Owyhee Avalanche*, dated March 27, 1869, which is headed, "Large bands of cattle are reported to be on the way here from Oregon."

The first cattle in the Pacific Northwest were not trailed from the east, but were brought by ship to Nootka Sound in the 1790's by the Spanish. Others, in 1813, were shipped from San Francisco to the mouth of the Columbia River. These cattle were beef animals of the shorthorn type. For many years, only the surplus bulls were slaughtered, the cows and heifers remaining in the herd to build up its numbers. It was not until 1838 that the first cows from this herd were slaughtered. By about 1840 the herd numbered approximately 3,000 head. This herd, plus the thousands of other cattle trailed west from 1834 to 1860 by the overland emigrants, brought to the far northwest a great number of cattle. These northwestern cattle were more compact and more meaty than the rangy Texas longhorns. Naturally these Pacific Northwest cattle were preferred by eastern buyers to the lanky, tough cattle from Texas (Oliphant 1946). Multiplying rapidly on the lush grasses of the far western valleys, these cattle were numerous enough to make the long drives east to the railheads of Wyoming and Nebraska profitable by the late 1860's. The Union Pacific Railroad came to central Nebraska and southern Wyoming in 1868 and 1869. The railroad was a ready-made pipeline for delivering western cattle to waiting eastern markets (Briggs 1934).

#### Cattle ranching

In the 1870's many cattle outfits were established in Idaho. Between the Joyce ranch on Sinker Creek and the Bruneau Sand Dunes, dozens of ranches were established. Most of the people living in this area were connected with the livestock industry. George Jones, an early Bruneau Valley resident, listed more than two dozen early Bruneau area ranchers (Jones 1963).

The Homestead Act of 1862, which allowed each man to claim 160 acres, was used by many ranchers to obtain land. The Timber and Stone Act of 1870 enabled settlers to buy 160 acres of land unsuitable for cultivation at \$2.50 per acre for development of forest and mineral resources. In addition, the Desert Land Act of 1877 enabled settlers to buy up to 640 acres of land at \$1.25 per acre, if an agricultural development, such as an irrigation system, was constructed (Sharp and Sanders 1978). This legislation made it possible for ranchers to take land out of the public domain. Some of the larger outfits concentrated on gaining control of waterholes, low grassy bottomlands, and wet meadows, which were very valuable for winter range in the pre-haying days (Rinehart 1932). Large ranchers were known to gain illegal ownership of some critical acreages by paying cowboys to file on the land as "homesteaders". When the proving time was up and the cowboy had gained title to the land, he would sign over the property to his employer (Stewart 1936). A legal means of achieving the same end was used by Henry Miller of the huge Miller and Lux cattle company. Miller would loan money to small settlers desiring to homestead in grassy valleys with waterholes or springs. Then when many of them went broke, he bought up the land cheaply. In this way Miller and Lux came to own most of the waterholes and grassy bottomlands from Burns, Oregon, east into the Owyhee Mountains in Idaho (Treadwell 1931).

Three large cattle companies operating in south-central Idaho during this decade were the Shoe Sole, the H. D., and the Wine Cup. The H. D. and Shoe Sole grazed the lands south of the Snake River. Miller and Lux,

another very large cattle corporation, grazed a vast area in southeastern Oregon, northern Nevada, and southwestern Idaho. Miller and Lux wintered cattle along the Snake River from Bruneau north to Ontario, Oregon (Rhinehart 1932). Some of these companies were so large that they did not know within several thousands how many cattle they owned. The huge outfit of Sparks and Tinnan ranged thousands of cattle from Bruneau east to American Falls and southward far into Nevada (Rhinehart 1932). Not so large, but still substantial, were the outfits of Con Shea, Anderson, and Harden and Riley. Con Shea grazed chiefly along the Snake River, and the other two outfits in and near the Owyhee Mountains. All of the above outfits wintered livestock on the lower desert (Hanley and Lucia 1973). Sharp and Sanders (1978) estimate that in 1874, 50,000 cattle grazed year-round within a 75-mile radius of Silver City.

Many of the cattle that were born on the Snake River plain or trailed there from the outside, were not marketed and sold. Herd sizes were allowed to increase as "capital" for the companies which owned them (Stewart 1936). Cattle, and not the land or its vegetation, were considered to be the primary resource by the cattle companies. Young et al. (1979) called this attitude the fatal flaw in western range use because it was based upon range practices which came north from Mexico with the Spanish longhorns. Mexican practice consisted of nomadically ranging huge droves of cattle over many thousands of square miles of free range. This kind of cattle husbandry was ill-suited to the northwest range with its shorter growing season and severe winters (Stewart 1936).

Cattle in some numbers were being marketed in Idaho in the 1870's. An article in the Owyhee Avalanche dated November 2, 1878, stated that cattle shipments from southwestern Idaho to San Francisco were "in full swing", and that about 1,200 head were scheduled to leave within a few days. Over 33,000 head had been shipped from Winnemucca, Nevada, during the previous year.

#### Cattle drives

Meanwhile, many Oregon and Washington cattle were being trailed through the Snake River country of Idaho. Some of these eastbound herds had buyers who acquired more cattle on the road east. When these large herds entered Idaho, cattle prices dropped (Stewart 1936). From 1872 to the early 1880's, in conjunction with a nationwide economic depression, prices of northwest cattle continued to decline. However, Idaho cattle prices were not as depressed as were prices in Oregon and Washington, because of the easier access to large markets through the Central Pacific Railroad terminal in Winnemucca, Nevada. Most western Idaho cattle were trailed to Winnemucca, then shipped to the active California markets and sold for relatively good prices (Oliphant 1946).

In the mid-1870's, the trailing of large herds eastward through Idaho became big business. In 1876, more than 10,000 head of cattle were driven through Idaho into Wyoming. The firm of Lang and Ryan, the largest cattle-buyer of the decade, bought herds in Washington, Oregon, and Idaho and trailed them east to railheads. In 1877, this firm bought 16,000 head and trailed them through Idaho (Oliphant 1946, Galbraith and Anderson 1971). In 1878 as many as 50,000 head were driven east across



Fig. 5. Cattle branding scene south of Boise ca 1885.

the Snake River plain. By this date, some Idaho stockmen were beginning to trail their own herds eastward (Oliphant 1946). Boise became a major trail stop for eastbound drovers, where they obtained mail and supplies (Gibbs 1976).

1879 was a boom year for trail herds going east across the Snake River plain. N. R. Davis of Wyoming bought 12,000 head in Oregon from Pete French and Con Shea to drive to Wyoming. Lang and Ryan drove 20,000 of their cattle east past Boise. The Idaho Weekly Statesman for May 24, 1879, noted that several herds of cattle, from 1,000 to 10,000 head per band, were crossing or near to crossing the Snake into Idaho and that many more herds were coming. This article pointed out that these cattle were damaging the range and were a concern to Idaho stockmen, who were occupied keeping their herds separate from those being driven through their range. Oliphant (1946) estimated that at least 100,000 head of cattle went through Idaho to eastern railheads in 1879. Most of these trail herds departed from the far Northwest in spring (Oliphant 1946), and would have reached the western Snake River plain at the time when the grass was greenest. Certainly they damaged the vegetation, all traveling as they did along the same route, the Old Oregon Trail (Gibbs 1976).

#### Cattle grazing practices

Stockmen on the western Snake River plain followed the same basic yearly grazing pattern. In early spring, having wintered the cattle in the lower desert elevations along the Snake, cowboys would separate the herds (herds tended to drift together and get mixed during the winter), and brand the calves (Fig. 5). There is even some evidence that most of the range cattle along the south bank of the Snake between the river and the Owyhee Mountains drifted together into one large herd by early spring (Owyhee Avalanche March 17, 1877). The cattle grazed in the lower desert elevations in early spring. Some cattlemen moved their stock from the desert very early to prevent death from larkspur poisoning. Larkspur (Delphinium sp.), a forb, was quite common along the Snake River in early cattle days (Shirk 1956). Larkspur was abundant in Con Shea Basin (Jones 1963).

When the desert grasses began to dry up, the cattle were moved to the foothills, and when these grasses browned, to the forest margins, or into the forest meadows of the Owyhee Mountains and the Boise Front Range (Rinehart 1932, Hodgeson 1948). With the coming of fall, the cattle themselves would drift back to the lower desert ranges to feed upon the dried perennial grasses called by the stockmen "spontaneous hay" or "standing hay" (Owyhee Avalanche March 17, 1877, Rinehart 1932, Hodgeson 1948, Nettleton 1978). Water was a limiting factor on the fall range, and some areas were not grazed in the fall because they were too far from water (Hodgeson 1948).



## CHAPTER IV

### The Beginning of the Sheep Industry

#### The coming of sheep to Idaho

Sheep had arrived in California in the early 1800's. These were the descendants of Spanish sheep from the Southwest. The southwestern sheep were of the Churra strain, a breed developed for milk and meat; their wool was poor in quality and quantity. Sheep multiplied rapidly in California, and became an important source of food for the 49'er miners in central California during the 1840's and 1850's (Paul 1976). By the 1860's, the sheep were extremely numerous, and in 1863 the Society of California Wool Growers reported a decided decline in range productivity (Sharp and Sanders 1978). In 1865, 1866, and 1867 dry summers made the forage problem in southern and central California critical. There was not enough forage on the range to sustain the number of sheep. Large numbers of bands were moved onto Nevada ranges, where they roamed nomadically for hundreds of miles in search of good feed. These bands of California sheep were the basis of the sheep industry in Nevada. From valleys in northern Nevada, such as the Humboldt Valley, bands of sheep were driven into southwestern Idaho. Several of these early bands of Idaho sheep, upon reaching the Owyhee country, were harassed, stolen, and/or slaughtered by marauding Indians (Hanley and Lucia 1973).

Idaho was in the midst of a gold and silver rush and had many hungry miners to feed. A flock of about 300 sheep was brought to Boise in the 1860's, and was sent to Idaho City to feed the miners. These sheep did not remain as a producing flock because those that were not slaughtered for mutton did not survive the harsh winter (Gibbs 1976).

By the mid-1860's, several bands of sheep had been trailed from California and Nevada to the Silver City area (Wentworth 1948, Hanley and Lucia 1973). In 1864, G. C. Johnson brought a breeding flock to Silver City from Jordan Valley, Oregon. This band of sheep probably originated in California (Wentworth 1948). In June of 1869, Dave Shirk drove a band of 2,500 sheep belonging to Phil Kohlhire from Silver City south through Duck Valley to White Pine, Nevada, where he sold them for \$7 a head (Shirk 1956). Shirk didn't record where Kohlhire got the sheep. Like many early cattlemen, Shirk loathed working with sheep, but had to admit that they were very profitable (Shirk 1956). From the very beginning, cattlemen resented sheepmen. In the late 1860's, the notorious Diamondfield Jack Davis, a gunman and employee of the Sparks and Harrel cattle outfit, harassed sheepmen in the Bruneau area. Later, he was convicted of murdering three sheepmen (Gibbs 1976).

In 1865 Major Gorham Gates Kimball and his partners George Hoag and John W. Burgess bought 3,700 sheep in California and trailed them to Idaho. The herd passed through Jordan Valley and the Owyhees en route to Boise. Kimball recorded that this trip was the worst experience of his life. The trek was dry, hot, and rocky, and feed for the sheep was in short supply. The flock was rested along the Boise River for some time. The sheep were sheared in Boise and later trailed east to Missouri (Hanley and Lucia 1973).

By 1870 there were only about 1,000 sheep in Idaho (Rinehart 1932), but their numbers grew rapidly. Perhaps the largest sheep operation in southwestern Idaho during the last 25 years of the 19th century was that of Robert Noble. Noble bought his first sheep from G. C. Johnson of Silver City in 1875 and established a ranch on Reynolds Creek (Wentworth 1948).

In the early 1870's the mining rush slackened and demand for mutton decreased (Wentworth 1948). After 1870 wool became the most important product of the sheep industry (Wentworth 1948). Because wool was so important, sheepmen kept wethers (castrated males) as well as ewes. Noble, for example, at one time had about 60,000 ewes and 80,000 wethers (Wentworth 1948). Wethers could travel faster over the range than could ewes encumbered with lambs, which allowed the sheepmen to use more distant and scattered ranges, and areas farther from water (Wentworth 1948).

At about this time, Idaho pioneer John Hailey trailed sheep into southwestern Idaho and ranged them near Boise. He later moved his operation to Ketchum (Wentworth 1948).

The early sheepman found it profitable to improve upon the rangy, short-wooled Churra. Many sheep owners imported rams of breeds which were noted for producing good wool such as the Rambouillet and Merino. Hanley and Lucia (1973) believed that most of the early wool-bred sheep were Rambouillet, but judging from older sources, this does not seem to have been the case. Where a breed or type was mentioned by these sources it was almost invariably the Merino. Robert Noble brought in good Merino rams for his ewes as his sheep operation began to grow (Fig. 6). An Idaho Historical Society photograph (14SGR62-50.28) taken sometime between 1890 and 1900 in Mountain Home shows several Merino rams imported for herd improvement. Hartman K. Evans, a sheep drover of the early 1880's, wrote that his trail band of 23,000 sheep were all of Merino type (Evans 1934). A Caldwell Tribune article, dated March 14, 1891, reports that the first sheep in the area had been of Mexican and California descent, but by then these had been crossed with fine Merino blood and were known as "Mexican Merino". Merino wool was worth many times the price of ordinary or "coarse" wool, and in the 19th century, most American sheepmen hastened to infuse Merino blood into their flocks (Hultz 1934).

#### Sheep drives east through Idaho

By 1870 large drives of Oregon sheep were proceeding eastward through Idaho along the Oregon Trail to midwestern railheads. Wentworth (1948) reported that Canyon and Ada Counties, which lay along the line of march for most of these bands, were good sheep range at this time. Another trail east to Wyoming went south of the Snake River (Rinehart 1932). There was some wool loss during the 1870's due to scabies (sarcoptic mange). The Bannock Indians, angered by the destruction of Camas Prairie by settlers' livestock, went on the warpath in 1878 and frequently raided livestock on the Snake River plain and in the Owyhee country. Their scattering and mixing of flocks resulted in the spread and increase of scabies. Scabies was not controlled until decades later, when dipping sheep into insecticide became common practice (Wentworth 1948, Breckenridge 1952).

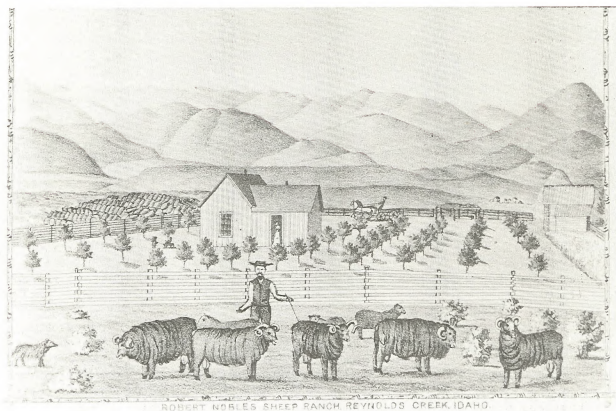


Fig. 6. Merino rams on Robert Noble's sheep ranch ca 1870.



Sheep came into southwestern Idaho in great numbers after the devastating winter of 1889-90 weakened the cattle industry, (Rinehart 1932, Wentworth 1948). A Statesman article dated March 19, 1891, deplored the practice of bringing Oregon sheep to Idaho ranges for fattening and called for a tax to be levied upon the "foreign" sheep which were ruining the range for Idaho sheepmen.

The 1880's and 1890's were the peak years for the drives of sheep through Idaho to eastern markets (Wentworth 1948). Hartman K. Evans was one of these drovers. In 1882 he trailed 23,000 sheep east from Oregon through Idaho in three large bands. His route passed near Nyssa (Oregon), Payette, Meridian, "Sunnyside", and slightly north of Mountain Home. Evans reported losing "only" 820 sheep on this trek, a figure which he considered low. All 23,000 of the sheep which Evans trailed in 1882 were wethers, which graphically illustrates the practice at this time of maintaining large numbers of wethers. Evans saw immense numbers of stock on the Snake River range--cattle, sheep, and horses (Evans 1934). In 1887, about 100,000 sheep were driven east through Idaho to be winter fed on the Great Plains (Idaho Statesman, August 25, 1887). John Knollin, later to become a prominent southeastern Idaho sheepman, drove several bands of sheep east from Pendleton, Oregon, to Cheyenne, Wyoming, Ogallala, Nebraska, or Las Animas, Colorado (Willison 1940). Some of the thousands of sheep trailed across the Snake River plain during these years were not destined for eastern markets, but went farther north to help found the sheep industry in Montana (Rinehart 1932). The sheep which were trailed through Idaho grazed as they went, causing further deterioration of range already badly damaged by cattle. Top speed for such trailed sheep was about twenty miles per day, given the most favorable conditions (Wentworth 1948).

#### Growth of the sheep industry

The southwestern Idaho sheep industry grew rapidly in the 1880's and 1890's. Whereas the 1880 census listed 27,326 sheep in Idaho, the 1890 census listed 357,712 (Rinehart 1932, Hodgeson 1948, Wentworth 1948). Many early sheepmen established large operations and developed new practices. In 1886, Ormsby and Todd brought 10,000 wethers to Boise. Robert Noble ran about 150,000 sheep from his ranch on Reynolds Creek (Caldwell Tribune, June 13, 1891). In the mid-1890's, Bacon built up a flock of about 9,000 ewes in the Bruneau area (Wentworth 1948). Basque shepherds were employed to herd the sheep, and the 1890's saw the appearance of the later-familiar horse-drawn "sheep wagons" on the Idaho ranges (Wentworth 1948). Many of these early Basques worked for Jose' Totorica, a Mountain Home sheepman who ran vast herds in the Owyhees. Robert Aikman, another large sheepman, ranged about 60,000 sheep out from Emmett (Gibbs 1976). Other important Boise and Mountain Home sheepmen of the times were Patsy Healy, John McMillan, Domingo Aguirre, Thomas McMillan, Will Montgomery, John Fletcher, Joe and Milton Bengochea, John Sibbal, Tom Melon, Frank Avelier, and John and Arthur Pence (Wentworth 1948, Aguirre 1979, pers. comm.). In addition, an 1891 Caldwell Tribune article (June 13) lists 36 sheepmen from southwestern Idaho near Caldwell. With this number of active sheepmen in the area, it is clear that these were boom-times for the Idaho sheep industry, with hundreds of thousands of sheep using the range.

In the 1890's, drovers continued to trail sheep through the Snake River country. Bands of from 2,000 to 10,000 came through Idaho, many first passing through Nevada en route from California. Upon reaching Idaho, these bands spread out over the Owyhee and Bruneau country, covering the whole area in their wanderings (Wentworth 1948).

Some of the sheep trailed to Idaho were not being taken to market. They were making a forage-seeking loop from points of origin in Utah. By being ranged in Idaho, these bands escaped grazing taxes in their home state. Some of these bands were wintered not far from Boise in the river bottomlands, and then returned to Utah in the spring to be sheared and/or sold (Wentworth 1948). Idaho sheepmen, feeling the pinch of limited forage, especially in winter, began actively to resent these "foreign" flocks. State laws were passed levying a grazing tax on these out-of-state bands if they were grazed in Idaho for 15 days or more (Idaho Statesman, March 19, 1891). Even so, violations occurred, and upon occasion violators were arrested (Caldwell Tribune, October 19, 1901).

Idaho began producing a respectable tonnage of wool. In 1888 about two million pounds of wool were shipped from Idaho to various markets (Caldwell Tribune, June 13, 1891). In 1891, Robert Noble's wool wagons daily hauled his wool into Caldwell to the railroad, beginning in early May and continuing for most of the summer before it was all transported. During the same year, 36 sheepmen from Caldwell to Reynolds Creek banded together for the purpose of building a woolen mill in Caldwell (Caldwell Tribune, June 13, 1891). In 1893, 826,267 pounds of wool were brought to the railhead at Mountain Home by the end of July with most being sent to Boston (Elmore Bulletin in the Caldwell Tribune, July 29, 1893). In 1894 Robert Noble alone sold 700,000 pounds for \$20,000 (Caldwell Tribune, July 4, 1894).

During a period when cattlemen were struggling to survive, sheepmen made money for two reasons. First, becoming a sheepman did not require the purchase of land and the establishment of a ranch "headquarters". Although the open range was essential to the cattlemen, nearly all cattle ranchers owned property of considerable acreage. This property, often one or more homestead claims, was the nucleus of each rancher's winter range, and later was often used to raise hay for winter feeding (Rinehart 1932). Some early sheepmen, Robert Noble for example, also had owned-acreage nuclei. However, most did not. Secondly, the early sheepman did not need the men and the number of horses necessary for working cattle. For a small investment, it was possible for a man to obtain a small breeding flock of sheep, a dog or two, and a couple of horses (Owyhee Avalanche, September 20, 1893). Many such small operators went into the wool business by buying a small flock and developing it into a large band of sheep. There were many of these operators, and they ranged all over southwestern Idaho, following the forage and having no ranch headquarters or real property. These drifting sheep outfits were called "tramps", "drifters", or "floaters" (Talbot and Cronemiller 1961, Douglass 1970). Many Basques used the "floater" method to become established as sheepmen (Douglass 1970).

#### Sheep grazing practices

Sheep grazing practices in southwestern Idaho were similar to cattle



Fig. 7. Winter feeding sheep near Boise in 1901.

grazing practices in patterns of seasonal range use. The sheep were wintered and lambled on the lower desert ranges (Jones 1963). Before 1900, Idaho sheep were bred to lamb in April and May, having used the new growth of early spring vegetation to regain weight and condition after winter (Stablein 1940). Sheep were sheared while still on the winter ranges. Several shearing camps were located on the desert south and west of Bruneau. Mountain Home was also an important shearing location. Some Indians helped at the shearing camps, and a few even had sheep of their own (Jones 1963). One sheep-owning band of Indians camped on Castle Creek in the 1890's (Phillips n.d.).

After shearing, the sheep were moved to higher ranges in late spring and early summer. In late summer the sheep grazed in the high forest meadows of the Owyhees and the Boise Mountains (Rinehart 1932). In the fall the sheep were returned to the desert lowlands (Jones 1963). Kennedy, who toured Nevada sheep ranges in 1901, reported an average of about 2,000 sheep per band herded by one or two men with dogs (Kennedy 1904). Kennedy noted that sheep were kept closely bunched when herded by dogs, and consequently the use of the range was concentrated.

More sheep than cattle may have perished during harsh winters (Young et al. 1979). The winter of 1889-90, which killed so many cattle, also killed large numbers of sheep (Wentworth 1948). Early flocks were not fed during the winter, and winter losses were heavy (Harstad 1972). Within a few years however, during a few critical weeks of winter, sheep were fed hay (Hanley and Lucia 1973). Hay was hauled to the sheep on the desert wintering grounds by horse-drawn wagons (Fig. 7). The first winter feeding in Idaho began in 1866 (Wentworth 1948). Some sheepmen did not feed the sheep until the animals were too weak to stand (Hanley and Lucia 1973). Even if the sheep died, the losses were not as high as they were for cattlemen. Sheep carcasses could be sheared, and the sale of wool would make up for half the loss (Idaho Statesman, Jan. 24, 1888).

The railroads and accelerated growth of the sheep industry

The advent of the railroad in the early 1880's spurred the growth of the sheep industry. Sheep were not considered an important part of the Idaho range industry until after the coming of the railroad (Rinehart 1932, Jones 1963). Wool was hauled by horse-drawn freight wagons from the shearing camps in the lower desert to Caldwell, Boise, Mountain Home, and Murphy (Fig. 8). A spur of the Boise, Nampa, and Owyhee Railroad crossed the Snake River near Guffy Butte, where the little town of Guffy sprang up (Nettleton 1978). Nothing of Guffy remains today except the railroad bridge (Groefsema 1949). This railroad spur ended at Murphy. Murphy became one of the largest sheep railheads in the northwest, with sheep trailed there from throughout Idaho and Oregon. Wool was hauled to Murphy as well (Hanley and Lucia 1973). Stock pens and loading ramps were built at Murphy to handle the large numbers of sheep (Jones 1963).

The sale of lambs for meat became profitable with the coming of the railroad. The big early-summer sheep drives to the east were replaced by shipments of fall lambs to the same markets. During the summer, lamb buyers would ride out to sheepmen's summer camps to contract for fall delivery of lambs at the railheads. Although many were driven to the



Fig. 8. Horse-drawn wool-hauling wagons, ca 1885.

Murphy stockyards, some southwestern Idaho lambs were trailed to Rogerson, Idaho and to Elko, Nevada (Jones 1963). Sheep ranching was more profitable than cattle ranching because sheepmen could now market two crops per year: wool in the spring and lambs in the fall (Work Projects Administration 1941). By 1900, the sheep industry was booming.



## CHAPTER V

### The Horse Industry and Feral Horses

The horse industry was never as economically important to Idaho as were the sheep and cattle industries. However, its effect upon the Idaho range was great. Because of their large size, large hooves, and wide-ranging habits, horses do a proportionately greater amount of damage to the range when compared with the damage caused by cattle or sheep (McKnight 1964).

#### Indian horses

The Shoshoni-Bannock of Idaho possessed horses for about 150 years prior to the arrival of white men (Haines 1970). These Indians ranged several thousand horses on the Snake River plain during presettlement times. However, by 1870 there were fewer than 500 Shoshoni-Bannock left in southern Idaho (Haines 1970), and the number of horses was reduced. As late as the 1880's, horse-owning bands of Indians roamed the tall sagebrush country between Indian Cove on the Snake River and Mountain Home (Young 1955). After the 1880's, the number of horses ranged by the Indians on the open range in southern Idaho was insignificant.

#### Horses of the early settlers

The Oregon Trail emigrants had great numbers of draft and riding horses which were to be used on homesteads. More horses than any other kind of livestock were brought west along the Oregon Trail (Unruh 1979).

The early settlers owned draft horses which they used to help clear the land and to haul freight. They also had saddle horses. Stockmen needed horses to herd and drive cattle. As the number of cattle increased, so did the numbers of horses. Horses were usually not broken to ride until they were 4 or 5 years old (Haines 1970), a practice which meant that ranchers kept herds of young, unbroken horses on the range. In order to maintain a continuous supply of mounts, a number of brood mares were needed, along with a few stallions. For each 1,000 cattle, 60 to 80 horses were needed by the rancher (Nettleton 1978). The brood stock was usually ridden. Each mature, broken horse was not used every day. Working horses were ridden hard, and a cowboy might use half a dozen horses in a week of herding or driving. When not used, the draft and riding horses were turned out upon the range to forage (Rinehart 1932, Nettleton 1978). Settlers' horses used the rangeland close to the farmsteads during the entire year (McKnight 1964). Ranchers' remudas of horses were driven or herded with the cattle as they were moved from range to range in order for the cowboys to have fresh mounts available when needed (Dobie 1952). Bands of brood mares, stallions, colts, weanlings, yearlings, and unbroken horses were left on the open range all year.

Large ranchers had large herds of horses. The Sinker Creek ranch had over 2,000 horses at one time. Con Shea and his brothers ranged about 2,000 head of horses between Silver City and Jordan Valley in the 1880's (Nettleton 1978).

## Horses of the eastern trail drives

When large herds of cattle were driven east across the Snake River plains, many thousands of horses accompanied them as mounts of the drovers. A herd of from 24,000 to 30,000 cattle trailed east across Idaho in 1880 had 120 drovers and 800 horses to manage it (Oliphant 1946).

## Early feral horses

Horses were turned out on the open range and were herded loosely or not at all, and consequently some horses strayed and became wild. Bands of feral horses were a frequent sight on the southwestern Idaho range (O.R. Hicks 1979, pers. comm.). When the railroad bisected the Snake River plain, wild horses would not cross the tracks. Those bands north of the tracks drifted toward the Lost River country, and the others towards the Owyhee country (Idaho Statesman, April 30, 1928).

Since wild horses were not herded from range to range with the greening of the grasses, they did great damage to the lower ranges by using the lower desert in the spring when soils were wet and soft, and seedlings were most vulnerable to trampling (McKnight 1964).

Wild horses competed for winter forage with cattle when forage was scarce. Keith (1938) reported that during the dry winter of 1894-1895, the thousands of domestic and feral horses on the Idaho range had eaten all the grass, and as a result many cows died. Most of Con Shea's 2,000 horses perished during the bad winter of 1888-1889 (Nettleton 1978), when many feral horses also died (Young et al. 1979). Unlike cattle and sheep, horses paw through snow to reach buried food. Although many died during unfavorable winters, horses were better able to survive than any other class of livestock, and increased in numbers (Young et al. 1979).

## The horse industry

In addition to being a market for western cattle and sheep, the east was also a market for western horses. Bands of horses were trailed to eastern markets through Idaho in the 1880's along the Old Oregon Trail (Oliphant 1946). During this period several Idaho ranchers began raising horses for profit rather than for use in other enterprises (Caldwell Tribune, April 29, 1910).

The most important of these ranchers was Kate C. "Kitty" Wilkins of Bruneau. Kitty was nationally known for her personal enterprise and for her fine horses. She was called "The Horse Queen of Idaho" and "The Horse Queen of the West." Kitty Wilkins operated the Wilkins Island ranch near Bruneau with her father and brothers for 40 years (Keith 1976). Her horses ranged around Bruneau and south toward Duck Valley (Jones 1963). She raised fine saddle, racing, and draft horses of several breeds, importing purebred stallions from the east to use in her breeding program. Some of her mounts were sold to the U.S. Cavalry (Keith and Anderson 1976). Others went to farmers and ranchers. Still others were trailed to Mountain Home and shipped east in railroad cars, often accompanied by Kitty herself, acting as her own agent. She often





Fig. 9. Horses at the Mountain Home railroad stockyards, ca 1890.

sold hundreds of horses in a single transaction (Groefsema 1949, Ellison and Howard 1974, Keith 1976).

When ranchers began to use hay for wintering cattle and sheep, many draft horses were needed for the heavy haying work. As a result, after 1890 many more draft horses were turned out upon the range in the fall after the haying was completed (Rinehart 1932).

Commercial freighters also used many heavy horses, which were turned loose on the range in the winter (Young et al. 1979). The horse industry grew rapidly in Idaho in the last years of the 1800's (Fig. 9). A Caldwell Tribune article (April 29, 1910) featured the young and growing horse industry. The 1880 census recorded 24,000 horses in Idaho, but the 1890 census reported 84,000 horses (Hodgeson 1948).

Feral horses from 1920 to the present

By the 1920's wild horses by the thousands roamed the Snake River plains, causing damage to the range (Hicks 1979, pers. comm.). In 1925, Dave Somerville rounded up 400 horses in Owyhee County, and drove them to Murphy, where he offered them free to anyone who would take them. They went unclaimed (Nettleton 1978). A March 25, 1928 Idaho Statesman article by Glenn Balch mentions bands of wild horses along the Owyhee River. The numbers of wild horses in Idaho peaked in the late 1920's, and about 20,000 feral horses were shipped from Owyhee county to Oregon to be used in making chicken feed. Nettleton (1978) believed that the lush Owyhee range was ruined by transient sheep and by loose horses.

Also adding to the demand for Idaho wild horses were the agents of foreign governments who bought horses to be shipped overseas to be used in encounters such as the Boer War (McKnight 1964). O.R. Hicks and his brothers were among the wild horse hunters who captured wild horses on the Snake River plain north of the Snake, broke them, and sold them to the U.S. Cavalry and other buyers (O.R. Hicks 1979, pers. comm.). Demand for domestic and foreign military mounts and draft horses increased the value of horses, and caused more to be sought and captured (McKnight 1964).

By World War II feral horse populations in Idaho had declined drastically. Ranchers began to hunt and shoot horses to reduce the competition between horses and cattle for forage (Nettleton 1978). Idaho wild horse populations were at their lowest numbers in the early 1960's. As a result of federal wild horse protection laws, the number of feral horses in Idaho is now increasing. At present, Idaho has about 1100 wild horses, mostly located in the Lost River country and southern Owyhee County (1980 BLM Inventory; Good 1980, pers. comm.).

## CHAPTER VI

### Range Conditions at the Turn of the Century

#### Range damage and legislation

During the early decades of the open range, the range was not managed. Forage for flocks and herds, especially during times of critical need in winter, was simply obtained by moving the animals to areas not yet grazed. But by 1900, usable ranges in the inter-mountain west were fully stocked and no expansion was possible (Hutchings and Stewart 1953). All seasonal ranges were damaged, and the carrying capacity in many areas had been lowered extensively. However, the numbers of cattle and sheep continued to increase, and the range, especially the winter range, suffered (USDI-BLM 1974).

By 1890 most cattlemen and sheepmen were feeding hay to their livestock during the winter (Wentworth 1948). The "Rye Patch", 70 to 80 acres of wild rye east of Sinker Creek along the Snake, was used for winter feed starting in the 1880's (Nettleton 1978). By the 1890's, irrigated hayfields were to be found in the Boise valley (Peterson 1976) and at Glens Ferry (Groefsema 1949). But still not enough winter feed was available for wintering Idaho sheep, cattle, and horses. In addition, the best winter range areas were being converted to agriculture at a newly-accelerated rate (Hodgeson 1948, Sharp and Sanders 1978).

Several important pieces of federal legislation were passed which resulted in the removal of large acreages of valuable winter range from the public domain. The Carey Act of 1894 made federal land available to certain states for development if irrigable and cultivable. At that time, Idaho applied for and received one million acres. In 1908 an additional two million acres were granted to Idaho under this act, and many settlers claimed sagebrush lands under its provisions. The Enlarged Homestead Act of 1909 allowed up to 320 acres to be claimed, and the Stock-Raising Homestead Act of 1916, up to 640 acres. Legislators in the east recognized that the original Homestead Act of 1862, which allowed for 160-acre claims, was inappropriate for the semiarid west, and that such small claims were unprofitable. However, even a 640-acre claim was not enough land on which to run a stock operation, and the many stockmen who filed on land under the acts of 1901 and 1916 had to depend upon the use of public rangeland. These new operations aggravated the problem of overstocking on public ranges by adding still more animals. In 1903 the Public Land Commission in its investigation of western range stated that the carrying capacity had decreased because of overstocking (Sharp and Sanders 1978).

#### Competition between cattle and sheep

In 1899 forest reserves were created, and Idaho chose to prohibit sheep grazing there. This excluded sheep from much of their former summer range (Young et al. 1979). Sheepmen were angry. A Caldwell Tribune article dated March 30, 1907, called the sheep industry "paralyzed" by this "evil" policy. Real competition for range resources

began. "Floating" bands of sheep, now very common on southern Idaho ranges, were herded from one good forage area to the next with a "he who gets there first gets all" philosophy (Rinehart 1932). Some of these bands were all wethers, which travelled very rapidly and were extremely destructive (Wentworth 1948). Cattlemen, tied to traditional grazing areas and lands near their owned claims, bitterly resented the floating sheep bands. Such cattlemen might drive their stock to a traditionally used area at a scheduled time, only to find that sheep had been there first, and had eaten all the forage. Tempers flared, and many cattlemen established "dead lines," or boundaries on the range which sheepmen crossed only at their own peril (Sweetser 1940). Sheepmen were beaten by cowboys, and their sheep scattered and shot (Wentworth 1948). Basque herders were suspect because they were foreigners (Caldwell Tribune, July 17, 1909), and often bore the brunt of the cowmen's anger (Talbot and Cronemiller 1961).

The cattlemen also retaliated by erecting illegal fences on public lands to keep out sheep, as well as competing cattle and horses. Federal fence laws were passed in 1885 prohibiting stockmen from fencing large tracts of public land, but these laws did not prevent or halt the illegal fencing (Idaho Statesman, 17 April 1886). Nash (1973) believed that most of the grazing done on public lands before the Taylor Act of 1934 was illegal in one respect or another.

Settlers were also angered by the ravages of range livestock. Their unfenced crops were on occasion damaged or ruined by open-range sheep and cattle; many settlers could not afford to fence their fields (Greenwood 1934). Even when the crops were protected by fences, itinerant bands of sheep were a serious problem, because they grazed all the forage up to the boundaries of the settler's fields, leaving nothing for his milch cows and work horses (Caldwell Tribune, January 23, 1904). To alleviate this situation, the 2 mile limit law was passed, which prohibited the grazing of sheep within two miles of a dwelling. Sheepmen felt persecuted by this law. F. Flood, a sheepman, wrote an article criticizing this law entitled "Perfidy and Infamy" (Boise Citizen, February 22, 1907).

#### Damage to native vegetation

The inevitable result of the intense competition for range resources was the alteration of the range vegetation. When sagebrush-grass vegetation types are intensively grazed, native perennial grasses are eliminated, and the shrubs, such as big sagebrush, tend to form dense monotypic stands (Blaisdell 1949). Since sagebrush is not a cattle forage and is only a poor sheep winter forage (Hutchings and Stewart 1953), the replacement of the sagebrush-grass community by a sagebrush community resulted in a great loss of available forage. By 1890, the native perennial grasses, for all practical purposes, were no longer present on southern Idaho ranges (Hodgeson 1948).

Under heavy grazing pressure, winterfat tends to be replaced by the less valuable shadscale, which is protected from excessive grazing by its stout thorns (Hutchings and Stewart 1953). If 70 percent of the current annual growth of winterfat is eaten during the growing season, the plants will die, and if grazed for an entire year, the plants will require ten



Fig. 10. Early stockman setting range fire. Engraving of a painting by early western artist Frederic Remington.



or more years of rest to regain their original size (Cox 1977). Sheep were held on the lower ranges during April and May lambing (Stablein 1940). Since native perennial grasses were seriously depleted (Hodgeson 1948), winterfat was probably heavily grazed.

To eliminate these dense shrub stands, many stockmen set range fires (Fig. 10, Griffiths 1902, Young et al. 1979). Since big sagebrush does not sprout from roots or stumps following burning (Vale 1974), burning gave the illusion that the sage had been replaced by native grass and forbs. Unfortunately, burning followed by grazing usually results in the eventual creation of even denser stands of pure big sagebrush (Blaisdell 1953, Harniss and Murray 1973). Many ranchers did not realize this, and the burning continued. Griffiths, who travelled the southwestern Oregon ranges in about 1900, reported that such range fires were common, and that many were set by sheepherders having floating bands (Griffiths 1902). The fact that sheepmen set range fires is common southern Idaho lore (Hicks pers. comm. 1979, C. Stewart pers. comm. 1979).

Many palatable plants cannot withstand even the lightest intensity of grazing. When grazing intensity is light, livestock can be selective in choosing the most palatable and nutritious forage plants, and as a result the most valuable plants often suffer great damage when the range is only lightly grazed. When the most palatable plants are gone, others are eaten, until only the least-utilized plants such as big sagebrush remain. Sheep especially have the ability to continue to gain weight on range that is in poor condition, and can be profitably run on severely damaged ranges, degrading them further (Hutchings and Stewart 1953).

In addition to the perennial grasses, the broadleaved forbs also suffered. Sheep especially like forbs, and select them when available (Blaisdell 1960). Arrowleaf balsamroot is relished, and so is waterleaf, Hydrophyllum capitatum (Kennedy 1903). The southern Idaho ranges do not have the abundance of native forbs, especially arrowleaf balsamroot, that they once had (Vahlberry 1940).

The decimation of the native perennial grasses and forbs by the turn of the century left a void in the vegetation of the southwestern Idaho lowlands (Young et al. 1979). Soil erosion became a critical problem on Idaho rangelands (USDI-BLM 1974). Part, but not all, of the void was filled by ever denser stands of big sagebrush. With no easing of grazing pressure, rehabilitation of the native perennial grass and forb understory of the shrubs was not possible (Young et al. 1979). The stage was thus set for the invasion of exotic annuals.

## CHAPTER VII

### The Invasion and Establishment of Alien Plants

#### Range conditions at the time of the invasion of exotic plants

By the early years of the 20th century, several decades of abusive grazing on the Idaho range had seriously depleted the native perennial grasses and forbs (Hodgeson 1948, Sharp and Sanders 1978). In many areas shrub density had increased, while that of native grasses and forbs had decreased. Pickford (1932) wrote that in the 30 years since 1880, burning and abusive grazing had resulted in an 85% reduction in perennial grasses, a 40 to 75% reduction in range carrying capacity, and an increase in the density of big sagebrush. Burning and abusive grazing allowed invasion of exotic weeds. There may have been islands of ungrazed vegetation in areas too distant from water sources for livestock usage, but much of the useable range was badly depleted (Rinehart 1932).

From 1910 until the end of World War I, large numbers of farmers came to Idaho (Rinehart 1932, Gibbs 1976). In the words of Hultz (1934), the country was "wheat mad". The railroads offered cheap one-way homeseeker fares, and many settlers took advantage of them (Rinehart 1932). Again, as had occurred with earlier waves of settlers, much of the land settled was winter range (Rinehart 1932). Large acreages of sagebrush were cleared for planting row crops and orchards. During the 1920's an agricultural depression began in Idaho (Gibbs 1976). Crop prices decreased significantly (Stewart and Hull 1949), and many farmers went bankrupt and abandoned their homestead claims (Gibbs 1976). Thousands of acres of plowed, abandoned farmland, many acres of which had been dry-farm wheat-fields, became the sites of the first significant invasion of exotic annuals (Warg 1938, Stewart and Hull 1949). After becoming established along roadsides and in abandoned farms, the exotics began to invade depleted rangeland (Warg 1938).

#### Alien Invaders

Russian thistle: Most likely, the first invader was Russian thistle, Salsola iberica. This spiny and compact annual forb is also known as "tumbleweed". Russian thistle invaded the west just before 1900 (Hutchings and Stewart 1953). Seeds of Russian thistle were probably distributed in Idaho via the Snake River, and were further distributed by irrigation canals (Dewey 1896). Russian thistle grows profusely on disturbed areas such as road shoulders, stock corrals, and in depleted winterfat and big sagebrush stands where there is some summer rainfall (Hutchings and Stewart 1953).

Photographs on file in the Idaho Historical Society collection document the early establishment of Russian thistle in Idaho. A photograph (IHS 64-44.3) of a railroad bridge in southeastern Idaho in 1890 shows Russian thistle growing on the embankment of the railroad right-of-way. Another photograph, taken at Walters Ferry in about 1890 (IHS 1948-E), shows many large Russian thistle plants growing at the ferry landing. An early photograph (IHS 75-232.16) of a railroad

accident near Medbury in southern Elmore county, although not in perfect focus, shows what is probably Russian thistle growing on the right-of-way. The town of Murphy in 1908 had much Russian thistle growing along the streets (IHS photo 77-137.4). Photographs taken in Melba from about 1913 to 1922 (Wylie 1976) reveal that Russian thistle was well established in Melba by that time. This photographic evidence indicates that Russian thistle was well established in disturbed areas in southern Idaho by 1910.

Russian thistle can be utilized by cattle in late summer when the plants are large and green (Murray and Klemmedson 1968). It survives trampling by livestock better than do cheatgrass or the exotic mustards (Piemeisel 1938). As it began to become abundant on the range, stockmen hailed it as a valuable new forage plant (Leopold 1941).

In addition to mechanical disturbance and destruction of native perennials, fire also helped to establish Russian thistle on Idaho ranges (Murray and Klemmedson 1968). Following range fires, Russian thistle is usually the first plant to become established upon southern Idaho ranges. It has invaded areas where big sagebrush and Stipa have burned (Piemeisel 1938, Murray and Klemmedson 1968).

Cheatgrass: The most important exotic annual to invade Idaho is the European winter annual Bromus tectorum, commonly called cheatgrass, downy chess, downy brome, Junegrass, cheatgrass brome, or Mormon oats (Hull and Pechanec 1947, Stewart and Hull 1949). The spread of cheatgrass in the western states was so rapid that it often escaped recording (Leopold 1941). Stewart and Young (1939) report that cheatgrass appeared in northern Utah in about 1900 and increased there along roadsides, along fencelines, and in old alfalfa fields. It spread to uncultivated areas depleted by unrestricted grazing (Warg 1938). Stewart and Young (1949) noted that cheatgrass was collected in Pennsylvania in 1861, in Washington in 1893, in Utah in 1894, in Colorado in 1895, and in Wyoming in 1900, and was present in nearly all of its present range by 1900. Stewart and Young (1939) implied that the spread of cheatgrass was from east to west. There also is the possibility that the first cheatgrass that arrived on Idaho ranges came from awns carried in the coats of sheep that came from California through Nevada to Idaho.

Many stockmen were very enthusiastic about the appearance and spread of cheatgrass, and believed that the new grass was superior to the natives it had replaced (Leopold 1941). They believed that it could not be injured by overgrazing or year-round use. J. R. Stablein, Regional Grazier for Idaho, wrote in 1940 that the new grass, cheatgrass, was far superior to the native perennials (Stablein 1940). This belief was mistaken because cheatgrass is not a useful stock grass for as long a period of the year as are the native perennial grasses, and its roots offer little soil protection from erosion in comparison with the native perennials. In addition, the amount of available cheatgrass forage fluctuates greatly from year to year (Stewart and Young 1939, Stewart and Hull 1949, Harris 1967).

Because cheatgrass is the most inflammable of the range forage plants, range fires in Idaho became more frequent. Five times more fire crews are required to stand by on cheatgrass ranges than on other ranges because it is 500 times more likely to burn than any other grass (Stewart



and Hull 1949). Leopold (1941) wrote that it is in fact impossible to protect cheatgrass ranges from fire. Burning is very damaging to big sagebrush (Pechanec et al. 1954) and may be damaging to perennial grasses, allowing cheatgrass to increase (Stewart and Hull 1949, Wright and Britton 1976). The presence of cheatgrass in abundance upon a range extends the fire season one to three months, and can carry a fire into areas that would not otherwise burn. Cheatgrass on the range greatly increases the chances of additional fires (Stewart and Hull 1949, Hill 1965, Pechanec et al. 1967). Cheatgrass increases even more rapidly when fire is combined with overgrazing (Stewart and Young 1939, Leopold 1949, Ellison 1960). Pickford (1932) wrote that from 1880 to 1910, burning and abusive grazing had caused significant damage to native perennial grasses, and a gradual increase in the density of big sagebrush in areas not repeatedly burned.

Stockmen also erroneously believed that cheatgrass yield was not lowered by burning (Stablein 1940). Many southern Idaho stockmen habitually set range fires (Hicks pers. comm. 1979, Fig. 10). Many burned cheatgrass areas do stay green longer and allow a few days more grazing in late spring than do non-burned areas. However, burned areas tend to become overgrazed rapidly, because cheatgrass is more palatable in burned areas for a longer period of time (Leopold 1949). Spring burning of cheatgrass range can significantly lower the forage yield (Pechanec and Hull 1945, Wright and Britton 1976).

By the late 1920's, cheatgrass was established and widely distributed on Idaho ranges. An Idaho Statesman article dated May 1, 1928, reported that the desert bunch grass had been replaced by grass that "grows in a day, ripens in a day, and blows away in a day." By 1932, the most important plant on Idaho spring ranges was cheatgrass (Rinehart 1932).

Cheatgrass and the fires that helped it become established destroyed important winter range for native big game animals. Mule deer cannot winter successfully upon cheatgrass (Leopold 1941). In addition, frequent cheatgrass fires denuded foothills once covered with brush. Brush is important winter and spring browse and cover for deer when snow is deep at higher elevations (Leopold 1941). Sweetser (1935) reported a decline in the numbers of wintering mule deer and wapiti in southern Idaho valleys at about the time when cheatgrass became widespread. In each succeeding year, the frequent cheatgrass fires have pushed shrubs farther up the foothills toward the mountains, leaving a narrowing band of native shrubs for wintering deer (Leopold 1941).

Cheatgrass awns catch in the coats of livestock and may be carried for miles before dropping out (Piemeisel 1938). The first instances of cheatgrass invasion in Nevada were in areas where California sheep had grazed (Kennedy 1903). An Idaho Historical Society photograph (number IHS 503-F, Fig. 11) taken at the mouth of Kuna Cave in southern Ada County in 1898 shows a stand of cheatgrass growing under a sparse cover of big sagebrush. Warg (1938) notes that cheatgrass is mentioned in Piper and Beattie's 1901 Flora of the Palouse, Howell's Flora of Northwest America in 1903, and in Piper's 1906 Flora of Washington. Cheatgrass, however, is not mentioned in Weaver's 1917 Flora of Southeastern Washington and Adjacent Idaho (Weaver 1917).



Fig. 11. Cheatgrass established near the mouth of Kuna Cave, ca 1890, in southern Ada County.

After its arrival in Idaho, cheatgrass became established very rapidly (Leopold 1941). By 1949 Bromus tectorum was the dominant species on four million acres of Idaho rangeland (Stewart and Hull 1949). Cheatgrass has been called an aggressive invader of big sagebrush grazing lands (Hull and Pechanec 1947), but Piemeisel (1951), who did classic successional studies in southern Idaho beginning in the 1920's concluded that invasions of big sagebrush ranges by cheatgrass were largely limited to areas with voids in the native vegetation. Warg (1938) wrote that cheatgrass cannot invade a pristine area, and that invasion of cheatgrass is an indication of disturbed range. Young et al. (1979) also felt that the exotic aliens could not invade stands of healthy native vegetation.

Cheatgrass has become the dominant species on millions of acres of damaged big sagebrush and shadscale ranges (Hutchings and Stewart 1953). An understory of exotics, such as cheatgrass, beneath big sagebrush will close the understory to the re-establishment of native grasses (Young et al. 1972).

Filaree and exotic mustards: Another exotic that invaded the rangeland in the early 1900's was the small forb Erodium cicutarium, known as filaree, crane's-bill, or stork's-bill. This forb was first found growing along railroad tracks. Its fruits are transported by becoming caught in the coats of animals (Kennedy and Doten 1901). Weaver (1917) reported that filaree was common in and around stockyards, in gardens, and in waste places.

Several members of the mustard family, tumble-mustard, Sisymbrium altissimum; tansymustard, Descurainia sophia; and peppergrass, Lepidium perfoliatum, invaded the depleted range. Weaver (1917:110) wrote that tumble-mustard, or "Jim Hill mustard" was introduced into the Pacific Northwest along railroad right-of-ways and was "present to a degree almost unbelievable." These mustards are unpalatable to livestock, a fact which favored their establishment (Kennedy and Doten 1901). The mustards are difficult to identify with certainty in photographs. A photograph (IHS 73-22.560) labeled "S. Idaho first Warehouse, Seed Industry", shows Russian thistle growing with what appears to be tumble-mustard, in approximately 1910. IHS photograph 68-05.45, taken at Massacre Rocks State Park along the Snake River in 1916, is the first reliable evidence of the presence of tumble-mustard and pinnate tansymustard in Idaho.

The seeds of tumble-mustard and pinnate tansymustard are distributed when the mature seed-laden plants break off and are tumbled along the ground by the wind. Mustards can tolerate more crowded conditions than can Russian thistle, and when stands become too crowded for the dry plants to become wind-blown, they can still persist in dense stands for several years. Mustards bloom from early spring to early summer, after which they dry. Peak demands by these plants upon upper soil moisture come before Russian thistle begins to grow. These characteristics enable mustards to invade areas dominated by Russian thistle. If a mustard stand is heavily trampled or otherwise disturbed, Russian thistle will replace the mustards (Piemeisel 1938). The mustards have a short tap root and do not protect the soil against erosion. Even cheatgrass, with its system of short fibrous roots, is superior to mustards in controlling

erosion (Hull and Pechanec 1947). In addition, the mustards, as well as Russian thistle, serve as a reservoir for the curly-top disease of beets, beans and tomatoes, and for its vector, the leafhopper Eutettix tenellus. This disease severely damages the above crops (Piemeisel 1938; Tisdale et al. 1969).

#### New patterns of secondary succession

After the exotic annuals were established in southern Idaho, a new pattern of secondary succession occurred. Originally, Gutierrezia sarothrae, a composite shrub, replaced big sagebrush following disturbance by fire (Stewart and Hull 1949). Then rabbitbrush and horsebrush invaded the area. Lastly, big sagebrush became re-established. There was little damage to the understory of native grasses, because fires were infrequent (Ellison 1960). After the advent of the alien annuals, the secondary succession pattern began with Russian thistle invasion, followed by mustard invasion, and finally by cheatgrass establishment. The Russian thistle dominated for a year or two, then the mustards for two or three years, and finally cheatgrass became the dominant species (Piemeisel 1938). If undisturbed by burning, cheatgrass stands were invaded in a few years by the native perennial grass, Sitanion hystrix (bottlebrush squirreltail) and by big sagebrush followed by other native perennial grass. The seedlings of bottlebrush squirreltail can compete successfully with cheatgrass (Hironaka and Tisdale 1963). However, if the cheatgrass were burned frequently and grazed, it was able to maintain itself indefinitely (Piemeisel 1938). Overgrazing combined with burning helped to insure a continuous stand of cheatgrass. Summer burning and severe overgrazing or trampling in many areas caused cheatgrass range to become again dominated by Russian thistle and mustards (Piemeisel 1938, Stewart and Hull 1949). Dense monotypic stands of big sagebrush which were maintained almost indefinitely resulted from heavy or ill-timed grazing, or one burning followed by grazing. Such stands were common on the range and often were virtually without an understory of grass and forbs (Pickford 1932, Blaisdell 1953, Pechanec and Blaisdell 1954).

## CHAPTER VIII

### Drought and Recovery

#### Drought

The years of World War I and those immediately following were boom years for Idaho agriculture and stock raising. Just prior to the post-war depression, many new areas were plowed and settled. Beef prices soared, and cattlemen expanded their livestock holdings. Then came the Great Depression. The pre-war expansion in agriculture and stock raising resulted in post-war overproduction. However, farmers still lobbied for dams and irrigation systems to guarantee even more abundant crops (Peterson 1976). Prices fell to such an extent that often the expense of harvesting the crops was more than their market value. As a result, unharvested food rotten in the fields (Greenwood 1934, Wells 1965, O. R. Hicks 1979 pers. comm.). Shortsighted Idaho stockmen also expanded their operations, creating a surplus which depressed prices. The decrease in prices was dramatic. Idaho, without a program to alleviate economic problems, ranked 7th among states having the greatest drop in income between 1929 and 1932. The average Idaho income fell over 49% (Peterson 1976). In 1932 the average cow in Idaho sold for \$25, though the cost of raising the cow for one year was \$60.78 (Rinehart 1932). Many stockmen, including many of the large range sheep outfits, went bankrupt when the banks failed (Young et al. 1979). In the early 1930's many farm mortgages, taken out during World War I, were foreclosed (Stewart 1936, Peterson 1976). Exotic annuals, already widespread on the range, quickly took over the abandoned farms (Piemeisel 1938, Wentworth 1948).

Immediately after World War I, Idaho and the other western states experienced fourteen consecutive years of subnormal precipitation, culminating in the severe drought of 1934 (Pechanec, Pickford and Stewart 1937). This was the most prolonged and serious western drought since weather data had been recorded (Pechanec, Pickford and Stewart 1937). The drought began at a time when the range industry had just been through a period of expansion. In 1918 and 1919 there were more cattle in the United States than at any other time in the nation's history (Stewart 1936). As the depression of the 1920's deepened, stockmen did not sell their herds, but hoped to wait out the drought and the depression and thus avoid the great expense of restocking the range after recovery (Chapline 1936). As a result, the range was stocked with numbers of large herds because bank loans were often based only upon the number of animals owned (Talbot 1936).

In the 1930's many Idaho ranchers moved their headquarters from the lower desert bottomlands to the higher foothills and valleys. The cattle and sheep were still driven to higher elevations in summer. Cowboys and herders kept them at lower elevations as long as practical to reduce trampling while the soil was still soft and wet in the spring. Only one rider per 1,000 cows was now needed. Careful distribution of salt blocks was also used to help control the movement of the cattle. Fall ranges were in the shortest supply during this period, with water a limiting factor. Winter range was less important than formerly, because most



cattle were pastured in harvested fields during the winter. The worst overgrazing still occurred on farm perimeters (Rinehart 1932).

Winter range was also less important for sheep. Some sheep were fed in fenced pastures during the coldest months, and were lambled in sheds at their winter quarters. Breeding was managed so that lambs were born in January and February, rather than in May and June as had previously been done (Rinehart 1932, Stablain 1940). After 1910, the price of wool slumped. As a result of the price slump, most sheep on the range after 1915 were ewes and lambs rather than bands of wethers. The open range, however, was still important to the sheep industry (Stewart 1936).

During the drought years, another grazing animal, the black-tailed jackrabbit, had an important impact upon the vegetation of southwestern Idaho. Rabbits and hares eat more grass than forbs, and as a result compete with cattle on the range (Vorhies and Taylor 1933, Flinders and Hansen 1972, Johnson and Hansen 1979). Black-tailed jackrabbits can be periodically and locally very abundant on Idaho ranges, and thus can eat significant amounts of grass (Anderson 1978). Black-tailed jackrabbits do not have a significant effect on heavy stands of tall grasses (Page et al. 1978), but can have an important impact upon depleted rangeland (Vorhies and Taylor 1933). Jackrabbits and livestock may preclude colonization of bare ground by all plant species except Russian thistle (Klemmedson and Smith 1964).

During the early 1930's the Snake River plain experienced a population explosion of black-tailed jackrabbits. Jackrabbits were so numerous that entire crops were destroyed. Incredible numbers of jackrabbits were rounded up by groups of farmers and stockmen (Fig. 13) and slaughtered by the thousands with clubs and guns. Greenwood (1934) reports that the stench from the black-tailed jackrabbit carcasses after the rabbit drives permeated whole areas of the sagebrush lands. She also notes that during the Great Depression jackrabbits and cottontails were extremely abundant and were an important part of the diet of the farmer. A May 12, 1934, article in the Mountain Home Republican warned stockmen to confine their livestock because a rabbit-poisoning drive was taking place. In September of 1934 (Mountain Home Republican, September 7, 1934), a Shoshone farmer facetiously wished the nation good luck by selling the "countless thousands" of rabbit feet left lying in the sagebrush after this anti-rabbit campaign. G. Stewart, a passenger on a train crossing the Snake River plain in the winter of 1932, was amazed by the innumerable jackrabbit tracks which peppered the snow for many miles (Stewart 1932). During a drought, jackrabbits can cause extensive damage to range plants on grazed range (Parker, undated), so the abundance of black-tailed jackrabbits in southern Idaho at this time must have aggravated an already critical grazing situation.

The driest years were 1927, 1928, 1931, and 1934. The summer of 1934 was the driest summer on record for the west and for Idaho (Pechanec et al. 1937). The continuing drought, combined with overstocking, caused severe overgrazing on the Snake River plain. The remaining perennial grass clumps disintegrated into fragments, and many of the fragments died. Remnant stands of wheatgrasses and Stipa species suffered extreme depletion (Pechanec et al. 1937).



Fig. 12. A jackrabbit drive in Southern Idaho, 1913.



As in previous years, stockmen blamed the range problems on drought and not upon overstocking. They continued to burn the range to eliminate big sagebrush. Many erroneously believed that cheatgrass was not damaged by burning. In fact, after burning, it takes cheatgrass range several years to regain its former level of productivity (Pechanec and Hull 1945, Klemmedson and Murray 1965). The increased rangeland acreage in cheatgrass meant more fires. In 1931, many fires occurred on southern Idaho rangelands. The occurrence of fires intensified the range problems during the drought years.

Wind erosion of the soil on burned areas became a serious problem (Talbot 1936). Unfortunately, many stockmen even hailed erosion. An article in the American Cattle Producer (Allred 1935) declared that erosion of the soil was desirable because it leveled rough terrain and produced fertile valleys! He warned stockmen that range managers and scientists were trying to alarm stockmen unnecessarily about erosion and overstocking for reasons of their own. With this rationale prevailing, halting the deterioration of the public range was not possible (Leopold 1941, Peterson 1976).

By 1934 the drought was critical. Thousands of springs were dry (Peterson 1976). The first hauling of water for livestock on the range in Idaho was reported in an August 31 article in the Mountain Home Republican (1934). Areas near water sources on the range were severely damaged by trampling. Municipal water systems, including those of King Hill and Mountain Home, were not supplying enough water to meet users' demands as early as mid-June (Mountain Home Republican, August 31, 1934, and June 15, 1934). By May 11, the Mountain Home Reservoir was dry, leaving fish stranded to die (Mountain Home Republican, May 11, 1934).

The depleted range, by this time supporting millions of acres of alien annual weeds, caused problems for farmers in 1934. The many acres of alien plants served as breeding grounds for the beet leafhopper. During that drought summer the alien annuals grew very little, and as a result, the leafhoppers invaded crops. Damage reached severe proportions. In six counties in southern Idaho, the sugar beet crop was reduced by 90 percent, and two sugar factories were shut down, putting 500 employees out of work (Clapp 1936).

In late July, Elmore County requested \$3,350 under federal drought relief programs to develop water sources. Important water holes that still functioned were overused. One such water hole, near Hammett, served 50,000 sheep and 1,000 cattle. Another water hole southeast of Mountain Home, called the "Rye Grass Hole," served 300 cows (Mountain Home Republican, July 27, 1934).

Native forbs suffered greatly during the summer of 1934. Few forbs, native or alien, were present on Idaho ranges in 1934 (Pechanec et al. 1937). By the end of the drought, range productivity had declined to approximately 25 to 32 percent of the forage value of virgin range. Big sagebrush areas had expanded and many stands of big sagebrush had increased in density. Only about one-fourth of the original perennial grass cover on the Snake River plains remained (McArdle et al. 1936). Most grasses had disappeared from salt-desert shrub vegetation areas as

well. Thousands of acres which were previously winterfat were now rabbitbrush and shadscale (McArdle et al. 1936). Areas which still had grass, including the lower valleys and wet meadows, were heavily grazed. Rangeland was grazed during the most damaging season of use. Ranchers who ran out of feed in fall and winter moved their stock onto the ranges while the ground was still wet (late fall, winter, and early spring) destroying millions of acres of rangeland. Erosion on southwestern Idaho ranges was severe (Talbot 1936).

Because many of these stockmen had increased the numbers of range cattle and sheep they owned during the early drought years, Idaho stockmen faced an economic crisis. The federal government responded by granting Idaho millions of New Deal dollars distributed by the Rural Electrification Administration, the Civilian Conservation Corps, the Civil Works Administration, public work grants, Federal Emergency Relief, Reconstruction Finance Corporation grants, and the Works Progress Administration. From 1933 to 1939, Idaho received a total of \$321 million in federal assistance (Peterson 1976).

The Civilian Conservation Corps had an especially important effect on the southwestern Idaho rangeland during these years. In 1936, a CCC camp housing 200 men was constructed south of the present Oreana store. In addition to building roads and digging ditches, the CCC workers built a long drift fence to separate Silver City cattle from Oreana cattle. This fence still exists. The CCC built other fences and developed water sources for range stock. One of the CCC projects was pulling larkspur in Con Shea basin (Nettleton 1978). They also built hundreds of concrete stock-watering troughs and tanks throughout the range (Jones 1963).

By the end of July, 1934, Elmore and Owyhee Counties had been designated emergency areas, and loans for emergency feed-buying were being made available to farmers and stockmen (Mountain Home Republican, July 27, 1934). The drought-relief program grew rapidly. In early August of 1934, the federal government took action to relieve the problem of starving cattle. The Agricultural Adjustment Administration purchased cattle which farmers and stockmen could no longer feed. These cattle were loaded on railroad boxcars in Mountain Home and shipped east for slaughter (Mountain Home Republican, August 3, 1934). The hides and meat were sold by the government or stored for later sale (Anon. 1934). The government cattle purchases continued throughout the fall and into the winter of 1935 (Mountain Home Republican, December 21, 1934). Sheep purchases by the Agricultural Adjustment Administration began in late September and also continued for several months (Mountain Home Republican, September 14, 1934). In addition, the federal government loaned money to stockmen so that they could buy winter feed for their remaining stock (Mountain Home Republican, Dec. 21, 1934).

The sheep industry had experienced an upturn in wool prices beginning in 1933, and as a result was not in as severe straits as was the cattle industry. Many sheep at that time were mortgaged to government agencies such as the Regional Agricultural Credit Corporation, and the wool from these mortgaged sheep was consigned to be sold by the government (Mountain Home Republican, May 12, 1933).

A heavy snowfall in late January 1935 heralded the end of the long drought (Mountain Home Republican, January 25, 1935). That summer was a good growing season, as there was sufficient rainfall for the range vegetation which still existed. The forb density was more than 100 percent greater than it had been in 1934, and the numbers of exotic annual plants increased dramatically (Hutchings and Stewart 1953). Cheatgrass recovered immediately, and continued to dominate the acres that it had invaded (Stewart and Hull 1949). The perennial grasses, weakened in vigor and much reduced in both numbers and density, did not recover (McArdle et al. 1936, Stewart and Hull 1937). However, some stockmen erroneously declared that the native grasses were just as luxuriant in 1935 as they had been before the long drought (Allred 1935). The abundant growth of exotic annuals masked the depletion of the perennial grasses (Stewart and Hull 1937). Cattlemen restocked the range with large numbers of cattle, believing that the drought was responsible for all the range problems and believing that once adequate rainfall had fallen, the problems had been solved. Ranchers were hesitant to restock the range at lower levels because cattle prices had been low during the drought years, and the ranchers needed to recover their losses (Chapline 1936, Ogden 1973).

#### Recovery

There were stockmen and government officials who were aware and concerned about the overuse of the public range. From 1913 to 1934, the belief that rangeland should be successfully managed, grew in acceptance. Bills for the regulation of grazing, including the Kent, Leavitt, Colton, and Garfield bills, were introduced in the United States Congress. Finally, in the depth of the drought, the Taylor Grazing Act was passed on June 28, 1934. The Act had the following objectives: to halt injury to the public grazing lands, to provide for orderly and efficient use in improving and developing the remaining range resources, and to stabilize the range livestock industry. In November of 1934, President Roosevelt withdrew 173 million acres of public land in 12 western states by executive order. The era of the open range had passed. These lands were administered by the Division of Grazing, later called the U.S. Grazing Service, which became the Bureau of Land Management (Young et al. 1979).

In the post-drought years up to and including World War II, the cattle industry expanded (Galbraith and Anderson 1971). Sheep, however, declined in numbers in Idaho. The Taylor Grazing Act of 1934 eliminated the floating bands of sheep belonging to operators who did not own lands (Douglass 1970). In addition, the development of synthetic fibers caused a slump in the demand for wool. Also, after the anti-immigration laws of the 1930's, sheep operators found it difficult to find skilled herders who would work for low wages. Watershed protection measures excluded sheep from some high watershed areas that had been used formerly as summer range. In addition, sheep were blamed for much of the severe overgrazing that had occurred in the western states, and many federal grazing administrators encouraged cattle grazing and discouraged sheep grazing on the public lands (Godfrey 1972). The trend of declining numbers of sheep has continued to the present. In 1942 the western states had 56 million sheep, but by 1964, the total number of sheep in the west was 16.5 million. In 1940, Idaho had 2 million sheep and 250,000 cattle

(Stablein 1940). Through World War II, the sagebrush desert between Boise and Mountain Home south to the Snake River was used mostly by sheep, but in the years since then, sheep operations have almost disappeared. Many former sheepmen turned to cattle raising (Aguirre 1979, pers. comm.).

#### Range problems during recovery

In the early 1940's, an insect infestation, combined with a drought in 1942-43, caused a large-scale die-off of shadscale in southern Idaho, with an estimated kill of from 20 to 30% of the existing shadscale shrubs (Hutchings and Stewart 1953). This insect damage was probably caused by the snout moth Orthesia annae (Chambers 1979).

Also in the 1940's, another exotic plant invaded the Idaho rangeland: Halogeton glomeratus, called halogeton or barilla. Halogeton is a native of the semidesert lands of the Altai region of central Asia (Tisdale and Zappetini 1953). This annual forb first invaded winter ranges where the native plants were injured by overgrazing. It also became established along road shoulders, on abandoned farms, and in areas trampled by livestock (Hutchings and Stewart 1953). Preferring a higher soil salinity than is usually found in big sagebrush areas, halogeton invaded many overgrazed winterfat and shadscale areas, although it also invaded some cheatgrass stands (Tisdale and Zappetini 1953). By the late 1940's and early 1950's it was widespread on Idaho ranges (Sharp and Sanders 1978).

Halogeton is a prickly forb which dies in the fall. Like the closely related Russian thistle, halogeton breaks off at ground level when dry and is tumbled by the wind in the fall, scattering its mature seeds. Heavy brush cover restricts its seed dispersal. Halogeton germinates and begins growth in very late spring and early summer, and it is often found growing in the same areas as peppergrass, an exotic mustard. These two annuals can co-exist in areas of low soil moisture because peppergrass grows, matures its seeds, and dies before halogeton has begun to grow (Tisdale and Zappetini 1953).

Halogeton is poisonous to livestock, especially to sheep. It is most dangerous to livestock in late summer and early fall when water on the range is scarce, because its succulent green leaves may be a desirable water source. In winter, sheep can usually eat halogeton with impunity, because much of its toxic oxalate material has been leached from the plant by fall rains (Cook 1977).

When halogeton first invaded Idaho, one of the areas which it invaded was the former winterfat winter range in the Raft River Valley. There many sheep brought down from the high ranges in the fall were poisoned and killed; eleven sheep operators were forced out of business. Many stockmen felt that halogeton was a menace serious enough to endanger the entire range industry. Little more than 6 ounces may kill a sheep (Dayton 1951). In some early instances of halogeton ingestion by range sheep, hundreds were killed (Twin Falls Times News, December 6, 1945). The feeling that the spread of halogeton was a real threat to the sheep and cattle industry caused much lobbying by stockmen at state and

national levels for legislators to enact laws to provide for the elimination of halogeton from western ranges. The legislation that was passed financed many studies on halogeton and halogeton control projects. Although halogeton invaded thousands of acres of southern Idaho range-land, it remained confined to the more saline soils and never became the serious threat to the sheep industry that stockmen expected. Federal halogeton control legislation, however, was useful. The Halogeton glomeratus Act of 1954 provided funding for improvement of adjacent big sagebrush grazing lands (Godfrey 1972).



## CHAPTER IX

### Range Management in Southwestern Idaho

#### Brush control

One of the principal objectives of much rangeland improvement was brush control. Most brush control measures involved big sagebrush communities. Ranchers and range managers correctly believed that eliminating the sagebrush would increase the grass cover on the range. But many incorrectly believed that the sage lands were originally grasslands with very little sage, and they felt that because grass was the natural climax, brush could not invade the community after it had been removed (Vale 1974). Brush control did improve range productivity and also increased the carrying capacity by allowing livestock free access to the grass and forb understory present (Hull and Klomp 1974).

Prior to 1950, only about 8,900 acres of rangeland brush had been subjected to control measures in the Boise District of the Bureau of Land Management, but by 1970, 375,121 acres had been included in brush control programs. These totals include shrublands burned and seeded, mechanically controlled and seeded, sprayed with herbicide and seeded, and lands that had been burned, mechanically treated, and/or sprayed, and left to revegetate naturally (Godfrey 1972).

Some of the investments in brush control and seeding programs have increased the carrying capacity of a treated area many times. In addition, this increased carrying capacity may in some cases have allowed decreased grazing pressure on certain overgrazed areas and improved evenness of grazing pressure (Godfrey 1972).

However, brush control measures have also had results not altogether favorable. Some ranchers did not wish to incur the expense of seeding rangeland, but nevertheless employed brush control measures on sagebrush lands that had virtually no understory of either grasses or forbs to reseed the range naturally. The consequences of such lack of foresight were soil erosion, reduction in productivity, immediate invasion by exotic annuals, and rapid reestablishment of big sagebrush (USDI-BLM 1974).

Thousands of acres of rangeland were sprayed with herbicides employed in sage-control programs. Following World War II, the chemical 2, 4-dichlorophenoxyacetic acid (2, 4-D) was perhaps the most widely used of the sage-control herbicides (Young et al. 1979). Spraying sagebrush communities with such chemicals often resulted in massive kills of the native forbs beneath the shrubs (Martin 1970, Vale 1974, Sturges 1975).

Burning of big sagebrush was often used as a brush control measure because it was relatively inexpensive (Godfrey 1972). Burning followed by establishment of wheatgrass seedings was an effective measure for improving rangeland productivity. But burning of big sagebrush communities followed by heavy or ill-timed grazing resulted in early reestablishment of sagebrush in dense, monotypic stands (Pechanec and Blaisdell 1954, Blaisdell, 1953, Johnson and Payne 1968). Burning also

enhanced the invasion of rangeland by rabbitbrush and horsebrush species, which sprout vigorously from the roots after fire (Pechanec and Blaisdell 1954, Wright and Britton 1976). Fire allows alien annuals to invade: first Russian thistle and then mustards, followed by cheatgrass (Piemeisel 1953). Once cheatgrass is established, the land is then much more likely to burn than when it supported a growth of big sagebrush. The cheatgrass remains and in turn is likely to burn repeatedly, maintaining the cheatgrass cover and causing soil erosion problems (Stewart and Hull 1949).

In some cases, chemical sagebrush control resulted in extreme proliferation of the unpalatable shrub rabbitbrush (Chrysothamnus species) (Pechanec 1941). Rabbitbrush seedlings invade rapidly after big sagebrush has been eradicated. McKell and Chilcote (1957) found that on southwestern Oregon ranges, caution was advisable in implementing brush control programs because of the quick takeover of rabbitbrush on brush-controlled ranges.

No brush control measure succeeds in eradicating sagebrush permanently. Reestablishment of sagebrush always occurs. The effects of a sagebrush removal project last from about 17 to 30 years (Sturges 1975). If, after brush control measures have been taken, grazing is not deferred long enough to allow grasses to spread over bare soil areas, or to permit wheatgrass seedlings to become well-established, then reinvasion by big sagebrush is extremely rapid. Rapid revegetation by shrubs also occurs when grazing pressure is heavy. Brush control combined with non-deferred and/or heavy or continuous grazing may result in monotypic stands of shrubs even more dense than the brush cover before brush control was attempted (Johnson and Payne 1961).

#### Range seeding

Seeding the Idaho ranges with productive grasses, usually following brush-control measures, began very early. The earliest range seedings in southern Idaho took place in 1909 and 1910. These were experimental seedings made by ranchers. Not until the 1930's, when wheatgrass seed became available in quantity, was large-scale seeding practical (Hull and Klomp 1966). Seeding with native grasses was attempted, but such attempts were largely unsuccessful. Wheatgrasses, (Agropyron species) which are perennial bunchgrasses, were found to give the best results. Planting of native Agropyron species such as inermis has been done with some good results, but two exotic wheatgrasses native to the semiarid Asian plains have been the most successful, productive, and widely-planted species. These are fairway wheatgrass, Agropyron cristatum, and crested wheatgrass, Agropyron desertorum (Pechanec 1941, Hull and Klomp 1974, Godfrey 1972).

By 1978, about 1.6 million acres of range, had been seeded in Idaho principally in crested wheatgrass and desert wheatgrass. Wheatgrass plantings markedly improve the range forage productivity in most cases, and have been of great value to southwestern Idaho stockmen. Crested and desert wheatgrasses are more tolerant of spring grazing than native grasses (Sharp and Saunders 1978). Wheatgrass plantings are exceptionally long-lived. The rows are still apparent 25 years after a planting. Several southern Idaho crested wheatgrass seedings are still



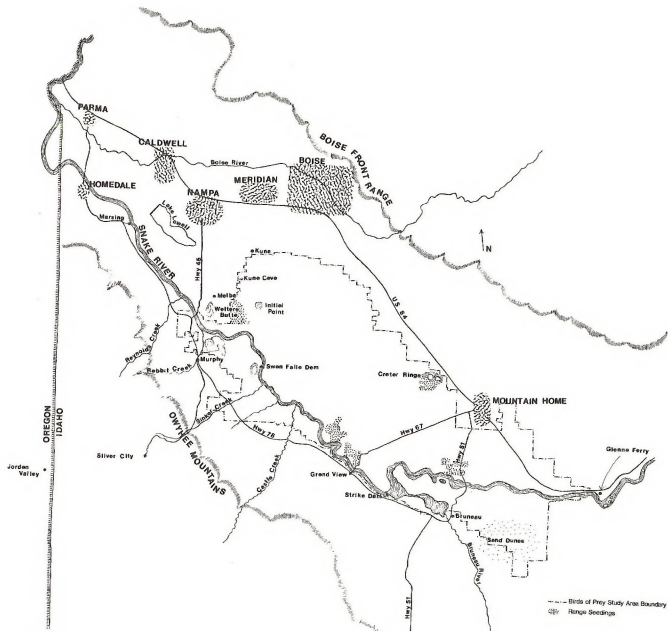


Fig. 13. Map of the Birds of Prey Study Area showing present landmarks, roads, and range seedings.

very productive 40 years after having been seeded, and show no sign of decreasing viability. A crested wheatgrass seeding that is not heavily grazed can successfully resist invasion by cheatgrass (Johnson and Payne 1961, Klomp 1965).

Wheatgrass seedings allow for more flexibility in the use of lower-elevation rangeland (Sharp and Sanders 1978). Wheatgrass stays green and palatable to livestock after some other grasses, especially cheatgrass, dry up. Use of crested wheatgrass seedings by livestock begins in early May and continues for one or two months. It may be grazed again in the fall (Fulcher and Mathews 1965). Wheatgrass seedings require an initial period of deferred grazing if the seedings are to become well-established and productive. For example, the Rattlesnake Seeding was planted in 1966 and first grazed in 1971 (USDI, BLM, Boise District unpublished grazing records 1966, 1971). Heavy use in spring of the Chalk Flat Blow-Out Seeding by sheep in 1972 caused invasion by cheatgrass and made reseeding necessary (USDI, BLM, Boise District unpublished grazing records). Since 1962, about 10,000 acres of crested wheatgrass seeding have been available for livestock use in the Sunnyside Grazing District on the Snake River plain south and east of Boise (7,000 acres west of Canyon Creek, and 3,000 acres east of Canyon Creek) (USDI, BLM, Boise District unpublished grazing records). Wheatgrass seedings in the Birds of Prey Study Area can be seen on Map 2.

Wheatgrasses are valuable forage for domestic livestock. However, wheatgrasses are not favorable forage and shelter for native game animals and birds. Because of their location in the sagebrush-grass vegetation type, wheatgrass seedings are within the winter ranges of mule deer and pronghorn. Mule deer and pronghorn do not utilize wheatgrass significantly during winter (Wagner 1978, Autenreith 1979 pers. comm.). Both of these animals require shrubs as browse in winter. Pronghorn also require shrubs as fawning cover in the early spring (Autenreith 1978). Native birds do not readily forage in or nest in wheatgrass seedings (Reynolds 1978, Wagner 1978).

#### Grazing management

In addition to shrub control and seedings, grazing management plans have been implemented on ranges in southwestern Idaho. Rest-rotation grazing has been used extensively in Idaho since 1950. Such programs may call for an entire year of no grazing every six years (USDI, BLM, undated). In this particular program, no range use is allotted for the period from April 1 to May 15, since the cattle are held in calving pastures on the home ranch during that time. However, some cattle in southwestern Idaho are still calved upon the open range. Rest-rotation grazing has several advantages. Grazing is more uniform, since the grazing pressure is more concentrated. During an emergency (such as a drought year), the rested acreage can be grazed. In addition, rates of conception are higher, since the stock are not so scattered (BLM Battle Creek Report). Expenses of rest-rotation grazing include the considerable expense of fencing many pasture areas and moving the stock from pasture to pasture on schedule. Some range scientists believe that the rest periods allow for recovery of range forage plants from grazing, and for increased productivity, while others contend that rest-rotation does

not seem to be any more or less valuable than other grazing systems (Pechanec 1941, Cox 1977, Sharp and Sanders 1978).

Placement of artificial water sources has provided more efficient use of desert ranges. In the 1950's, many stockmen began to provide stock watering tanks on the desert range. Large galvanized metal tanks holding several hundred gallons each are now put on the desert range at calculated intervals. These tanks are refilled periodically by water tanker trucks all year except during the summer months when the livestock are taken to higher ranges (USDI, BLM, Boise District unpublished grazing records). The range use, consequently, is more evenly distributed. Areas of the range far from water sources previously grazed by sheep but ungrazed by cattle have been opened up to cattle use [Cattle need more water and more frequent watering than do sheep (Jardine 1915)]. Placement of stock tanks has also extended the season of use on lower desert ranges. Addition of these new water sources has not been without its drawbacks, however. The areas adjacent to the tanks suffer trampling damage. Also, areas that were formerly lightly grazed because of limited access to water can be heavily utilized, which can allow the range to be uniformly overgrazed (USDI, BLM 1974).

#### Livestock numbers

Range improvement practices, better distribution of water sources, more timely grazing, and other factors have allowed for a steady increase in the number of Animal Unit Months (AUMs) allotted on Idaho ranges since World War II. The very low numbers of cattle following the crash of the 1930's reduced pressure on the range for several years. Most range scientists and ranchers agree that the quality and productivity of the range have improved substantially since the 1930's. Carrying capacity appears to have improved considerably (Young et al. 1979).

In Idaho in 1951, the Bureau of Land Management and the United States Forest Service issued permits for 711,000 cattle and horse AUMs. In 1961, 789,000 cattle and horse AUM permits were issued, and in 1971, 931,000 were issued, reflecting a steady increase in the numbers of range cattle (Sharp and Sanders 1978).

Sheep numbers, on the other hand, have steadily declined. In 1947, the Bureau of Land Management and the United States Forest Service issued Idaho permits for 960,000 sheep; in 1951, 856,000; in 1961, 693,000; in 1971, 534,000; and in 1975, 494,000 (Sharp and Sanders 1978). By the end of World War II sheepmen were concerned about the decline in sheep numbers in the West, and in 1952 the National Wool Grower's Association began a drive to increase numbers of sheep, the goal being 50,000,000 sheep by 1960 (Breckenridge 1952, Reed 1952). Immigration laws passed in the 1920's had greatly reduced the supply of foreign-born sheepherders, and it was virtually impossible to hire American sheepherders (Etulain 1974). By the 1950's the sheepherder shortage was critical (Reed 1952). Sheepmen lobbied the United States Congress for wool price support and tariffs on foreign wool (O'Mahoney 1952). They also supported successful legislation which slightly increased the immigration quotas for Basques and Mexicans (Reed 1952). In spite of these efforts, sheep numbers continued to decline and are still declining rapidly (Godfrey 1972, USDI, BLM, Boise District grazing management files).

In very recent years, however, southwestern Idaho sheepmen have found a source of sheepherders in Peru, hiring men there and bringing them to Idaho to herd sheep. The Peruvian herders remain for two or three years before being returned to Peru by the sheep companies (Magnosto, pers. comm. 1980).

#### Range fires

No early records exist which document how many, how frequent, and how extensive early fires were. However, from 1950 to the present, the Boise District of the Bureau of Land Management has kept detailed fire records with maps of the burns. These burn maps, when compared to maps of the current vegetation, indicate that areas of cheatgrass and/or other exotic annuals have burned much more frequently than areas dominated by native vegetation. The proximity of the railroad to stands of cheatgrass and annual mustards has resulted in many fires. The Boise District fire records list "railroad" as the cause of many of the fires in southern Elmore County which occurred in exotic annual vegetation. Thousands of acres near Medbury Hill and Reverse have been burned many times since 1950 (USDI, BLM, Boise District unpublished fire records 1950-1979). A photograph taken near Reverse in about 1900 (Fig. 14) shows an abundance of native grasses (probably *Poa*) and forbs in very close proximity to the railroad, without even an embankment to separate the vegetation from the tracks (Idaho Historical Society photo no. 62771). At this time the railroad had been in operation for about 20 years, and yet the native vegetation seems relatively undisturbed. The invasion of exotic annuals may have greatly increased the incidence of railroad-caused fires. In addition to the railroads, another activity that has increased the frequency of fires in recent years is the training activity on the Idaho National Guard Gunnery and Bombing Range, which includes several thousand acres of desert rangeland in eastern Ada County and western Elmore County. Firing of infantry guns and dropping of incendiary bombs have caused many range fires during the spring months when military training maneuvers are taking place (BLM fire records 1950-1979). Some areas, such as several hundred acres northwest of Cinder Cone Butte in western Elmore County, have been burned as frequently as seven times in 20 years (BLM fire records 1950-1979).

#### Medusahead

Another factor affecting the range in recent times has been the invasion of rangeland by another exotic annual. Medusahead, *Elymus caput-medusae* (or *Taeniatherium asperum*), began to invade Idaho rangeland in the 1940's. Medusahead is a winter annual which prefers clay soils. Its tough, leathery leaves and persistent, prickly awns make it extremely unpalatable to livestock when dried (Hironaka 1965). Medusahead is capable of replacing cheatgrass, and has done so on 700,000 acres of west-central Idaho rangeland. Several areas in northern and eastern Ada County have been invaded by medusahead, and an area in northwestern Owyhee County not far from the Oregon state boundary, has also been infested (Sharp and Sanders 1978). Heavy grazing and/or frequent burning is fostering the continued spread of medusahead on cheatgrass ranges in west-central Idaho. Once established, medusahead is extremely difficult to eradicate, and its spread poses a real threat to the continued productivity of the Idaho range (Hironaka 1965).

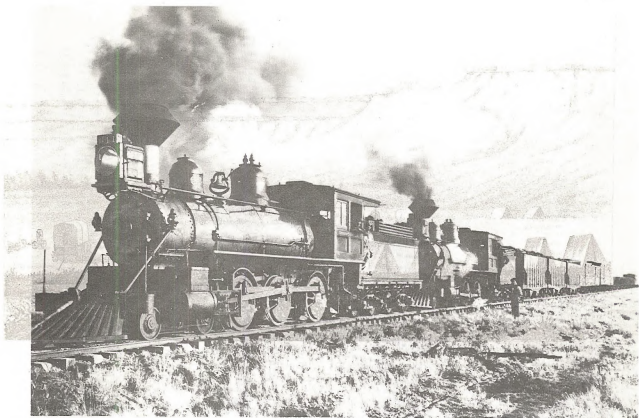


Fig. 14. Oregon Short Line on Snake River near Reverse in southern Elmore County, 1900.



Fig. 15. Modern cattle drive at Con Shea's old water hole on the Snake River.





Fig. 16. Sheep on winter lambing quarters near the Snake River.



## Shadscale range

Shadscale range, which provides important winter and early spring sheep forage and some cattle forage, sharply declined in productivity from 1955 to 1960. Between 1955 and 1958, outbreaks of two insect pests, *Orthesia annae* and *Eumysia* sp. devastated local shadscale populations on the Snake River plain salt-desert ranges (Sharp and Sanders 1978). The shadscale range was dominated by the annuals halogeton, peppergrass, and tansymustard during the dry summers of 1959, 1960, and 1961. By 1963, return of some shadscale to areas which it had formerly dominated became evident. In the years 1962 to 1965, precipitation was more abundant than usual, and the recovery of shadscale was rapid. Squirreltail grass also increased in abundance during these years (Sharp and Sanders 1978).

## Current grazing practices

Although current grazing practices in Idaho vary, a typical cattle operation ranges cattle on public lands at lower elevations from the middle of April until the middle of June. Then the cattle are trucked to higher elevations and ranged on Forest Service or deeded lands until the end of September, when they are trucked back to lower ranges for fall grazing. During the late fall, winter, and early spring, the cattle graze or are fed on the private lands of the home ranch (USDI, BLM 1974, Sharp and Sanders 1978, USDI, BLM unpublished grazing records). However, some cattle are still grazed in winter and early spring on public lands, and are driven, rather than trucked, from range to range (Fig. 15). Steers are no longer held on the range for several years before being sold for slaughter. Most cattle operations in Idaho are now cow-calf operations, with the calves being feedlot-finished (USDI, BLM 1974, Sharp and Sanders 1978).

A typical Idaho sheep operation grazes sheep on lower ranges on public lands from early April to the middle of May. The sheep are grazed on foothill ranges at intermediate elevations until the end of June. These foothill ranges may be on public, private, or state-owned lands. At the end of June, sheep are trucked to high ranges on public or private forest lands. In early October, the sheep are trucked back to the intermediate ranges, and during the middle of November, are moved to the lower ranges on public land, or to rented pastures for about a month. From the middle of December to the end of March, they are held at winter headquarters, usually irrigated pasture, harvested cropland, or feedlots (BLM 1974, USDI, BLM unpublished grazing records). They are lambled at the winter headquarters in long lambing sheds (Fig. 16). Herders with dogs are used to herd the sheep during the spring, summer, and fall months. Again, however, some sheep are grazed on the public lands at lower elevations during the winter and spring (Godfrey 1972).

## CHAPTER X

### The Future of the Range

#### Present range conditions and management suggestions

In 1973, the condition of the rangeland in Idaho under the administration of the BLM varied considerably. BLM judged 3 percent of the range to be in excellent condition, 24 percent in good condition, 52 percent in fair condition, 19 percent in poor condition, and 2 percent in bad condition. 17 percent of the range was classified as improving in condition, 71 percent as not changing, and 12 percent as declining. In 1966, about 25 percent of the BLM land was classified as "poor" (BLM 1974). This indicates that in spite of the increased numbers of livestock grazing on these lands, there appears to be a general trend toward better range conditions (USDI, BLM 1974). Seedings of wheatgrasses and development of range water sources, as well as more acres of irrigated pasture and forage-crop agriculture have contributed to the increased range productivity. Private landowners are continuing to make important investments in range improvements (Sharp and Sanders 1978).

However, the apparent upward trend in range productivity is more complex than it appears on the surface. Range condition and trend evaluations became a standardized and widely used tool in the late 1930's and early 1940's (Sharp and Sanders 1978). This was the period of the most severe and widespread range forage depletion in the history of the public domain (Pechanec et al. 1937). It would be unusual if, using these very poor years as the base lines for comparison, substantial improvement did not occur during subsequent years of higher rainfall. Range productivity has increased since the 1930's, but present productivity cannot be compared to the productivity of the range when in its presettlement condition, when such valuable forage plants as the native perennial grasses and winterfat were present in abundance (Young et al. 1979).

Modern range management in many respects works toward the sound ecological goal of stabilizing range communities at high levels of productivity and providing good soil cover to minimize erosion, but it is impossible to return the Great Basin range to its pristine condition even by cessation of all grazing by domestic animals. Despite the goal of high productivity, millions of acres of rangeland have become dense monotypic stands of unpalatable shrubs with virtually no understory (Young et al. 1979). Although there is no way to return the range to presettlement conditions, seedings of mixed perennial grasses in addition to wheatgrass seedings may provide an element of stability and continued productivity in degraded range communities. For game animals, breeding birds, prevention of soil erosion, and community diversity, seeding of such grasses may be an answer (Vallentine 1971).

Cheatgrass cannot be eliminated from the range, and since it does furnish valuable forage, should be managed for maximum productivity and soil protection (Stewart and Hull 1949, Fulcher and Mathews 1965). Cheatgrass ranges adjacent to areas which have been invaded by Medusa-head rye should be well-protected from burning and from overgrazing, to

prevent Medusahead takeover (Hironaka 1965). Fire prevention on cheatgrass range, although expensive, does result in higher productivity and fewer stands of mustards and Russian thistle (Klomp 1965, Hull 1965). Some sagebrush re-invasion of cheatgrass stands might be allowed, since sage does not compete with cheatgrass for soil moisture (Klemmedson and Smith 1964), offers better protection from soil erosion than exotic annuals (Vale 1974), and makes cheatgrass stands much less likely to burn. In addition, some sagebrush in cheatgrass stands would provide food and cover for sage grouse, mule deer and pronghorn (Vale 1974, Autenreith 1978).

Timing and intensity of grazing should be carefully controlled. Care should be taken that water-tank placement does not cause uniform overgrazing (Godfrey 1972). Desert ranges still supporting populations of native perennial grasses should not be grazed until after the grasses have matured seed. Areas which are dominated by early seral annuals such as Russian thistle or exotic mustards should not be grazed for several years until good stands of cheatgrass are established (Hull 1965). While Russian thistle can be used as forage, it allows much soil erosion. Exotic mustards also allow soil erosion, and are themselves highly unpalatable to livestock (Hull 1965, Klomp 1965).

Cheatgrass, though it has disadvantages, furnishes forage, gives the soil some protection from erosion, and can maintain a stand under moderate to heavy grazing (Klemmedson and Smith 1964). Stands of cheatgrass should not be allowed to regress to earlier seral stages (Hull 1965, Klomp 1965). Because of the dominance of cheatgrass on millions of acres of range, and because its forage production varies greatly depending upon the normally highly variable weather patterns of the northern Great Basin, stockmen should raise or purchase and store sufficient hay to carry all of their stock through summers and severe winters, in order to prevent serious range damage during these years. Stocking levels of ranges dominated by cheatgrass should be based upon forage production during poor years (Hull 1949). This would give some stability to the industry and a measure of protection to cheatgrass ranges during drought years.

## SUMMARY

The rangeland of southwestern Idaho, once a mosaic of vegetation dominated by open stands of either big sagebrush with an understory of native perennial grasses, winterfat and other salt-desert shrubs, or wild rye and other grasses was severely damaged by overgrazing during the range cattle boom of the 1880's and by the sheep boom which followed. Continued high stocking levels, combined with the 14-year dry period which culminated in the severe drought of 1934, resulted in the virtual elimination of the native grass understory, a great reduction in the area dominated by winterfat, and the creation of dense monotypic stands of big sagebrush (Pechanec et al. 1937). After destruction of native range vegetation, exotic annuals such as Russian thistle, mustards, cheatgrass, halogeton, and Medusahead invaded southern Idaho. Millions of acres of rangeland are now dominated by these annuals, and the original character of the vegetation is much changed. In more recent decades grazing management and range improvement programs have brought about an increase in range productivity. But in some respects these programs do not well serve the native animals and vegetation. Much of the range is still overstocked or poorly managed, and could be severely damaged during a year of low rainfall. Since it is not possible to return the rangeland to its pristine condition, only very careful and enlightened management can guarantee a productive future for the southwestern Idaho range.

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## NEWSPAPER CITATIONS

### The Boise Citizen

Flood, F. February 22, 1907. Perfidy and infamy.

### The Caldwell Tribune

Anon. February 26, 1887. Untitled.

Anon. May 26, 1888. Untitled.

Anon. March 14, 1891. The little sheep.

Anon. June 13, 1891. Untitled.

Anon. October 29, 1892. A new industry.

Anon. July 29, 1893. Wool at Mountain Home. From the Elmore  
Bulletin.

Anon. July 4, 1894. A big deal.

Anon. October 19, 1901. Idaho officers sued.

Anon. February 7, 1903. Utah news.

Anon. January 23, 1904. Two mile limit law emasculated.

Anon. March 30, 1907. Sheep industry paralyzed.

Anon. July 17, 1909. Trouble anticipated.

Anon. April 29, 1910. Caldwell is the horse market.

### The Idaho Statesman (including the Idaho Weekly Statesman, the Idaho Tri-Weekly Statesman and the Idaho Daily Statesman)

Reynolds, J. S. December 28, 1865. Our climate.

Reynolds, J. S. March 11, 1865. Condition of the county.

Anon. September 7, 1869. Owyhee County.

Reynolds, J. S. May 8, 1869. Wool producing in Idaho.

Anon. May 4, 1871. Sheep raising.

Anon. February 20, 1872. Untitled.

Anon. July 17, 1873. Untitled.

The Idaho Statesman (continued)

- Anon. June 5, 1875. Stock raisers' marks and brands.
- Kelly, M. January 26, 1875. Stock raisers' marks and brands.
- Anon. May 24, 1879. Title.
- Anon. March 23, 1880. Beef cattle.
- Anon. November 5, 1881. The cattle breeders.
- Kelly, M. January 27, 1881. Driving stock east.
- Anon. August 9, 1881. Form cattle clubs.
- Anon. November 20, 1884. Untitled.
- Anon. December 30, 1884. Once in ten years.
- Anon. July 29, 1886. Diversified farming.
- Anon. April 17, 1886. Fence laws.
- Sparks, T. March 29, 1887. Idaho cattle are all right.
- Anon. August 25, 1887. Shipments over the Oregon Shortline Railroad.
- Anon. February 10, 1887. Stock ranges eaten out.
- Anon. December 20, 1887. The horse queen of Idaho.
- Anon. January 24, 1888. Raising stock.
- Anon. February 3, 1888. Untitled.
- Anon. March 19, 1891. Protecting ranges.
- Anon. April 30, 1928. Wild horse days ended.
- Anon. May 1, 1928. Mustang finds champion in veteran range rider.
- Balch, G. March 25, 1928. Wild horses in Owyhee County.
- Martin, S. August 9, 1931. Come from the range to an inglorious end.
- Taylor, R. C. February 4, 1940. Nampa's white sage fed cattle for Boise Basin's miners in 1864.

#### Mountain Home Republican

- Anon. June 27, 1930. Owyhee County wild horses.
- Anon. May 12, 1933. Pest eradication campaign starts.
- Anon. May 12, 1933. Wool prices still continue upward.
- Anon. January 20, 1933. Lambing season gets under way.
- Anon. May 11, 1934. Reservoir dry, fish stranded.
- Anon. July 6, 1934. Drought relief project applied.
- Anon. July 27, 1934. Elmore designated emergency area.
- Anon. August 3, 1934. Cattle owners meet Tuesday.
- Anon. August 31, 1934. Drought relief to furnish water.
- Anon. September 7, 1934. Rehabilitation plans approved.
- Anon. September 14, 1934. Sheep purchase plan starts soon.
- Anon. December 21, 1934. Cattle purchases to be continued.
- Anon. January 25, 1935. Heavy snow on local watershed.

#### The Owyhee Avalanche

- Anon. March 27, 1869. Large bands of cattle reported to be on the way here from Oregon.
- Anon. September 20, 1873. Stock raising.
- Anon. March 17, 1877. The cattle.
- Anon. November 2, 1878. The cattle trade--something for railroad men to consider.

#### The Owyhee Nugget

- Anon. October 14, 1905. Untitled.

#### The Twin Falls Times - News

- Anon. December 6, 1945. Deadly new poisonous weed kills 1,100 sheep on ranges.

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